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[H.A.S.C. No. 97-33]

ORIGINAL

HEARINGS

ON

MILITARY POSTURE

AND

H.R. 5968

[H.R. 6030]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1983

BEFORE THE

COMMITTEE ON ARMED SERVICES HOUSE OF REPRESENTATIVES

NINETY-SEVENTH CONGRESS

SECOND SESSION

Part 3 of 7 Parts

PROCUREMENT OF AIRCRAFT, MISSILES, TRACKED COMBAT VEHICLES, TORPEDOES, AND OTHER WEAPONS—TITLE I

HEARINGS HELD

MARCH 2, 3, 4, 9, 10, 11, 17, 18, 22, 24, AND 25, 1982

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97TH CONGRESS
2D SESSION

H. R. 5968

To authorize appropriations for fiscal year 1983 for procurement, for research, development, test, and evaluation, and for operation and maintenance for the Armed Forces, to prescribe personnel strengths for the Armed Forces and for civilian personnel of the Department of Defense, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 25, 1982

Mr. PRICE (for himself and Mr. DICKINSON) (by request) introduced the following bill; which was referred to the Committee on Armed Services

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A BILL

To authorize appropriations for fiscal year 1983 for procurement, for research, development, test, and evaluation, and for operation and maintenance for the Armed Forces, to prescribe personnel strengths for the Armed Forces and for civilian personnel of the Department of Defense, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Department of Defense Authorization Act, 1983".

TITLE I—PROCUREMENT

AUTHORIZATION OF APPROPRIATIONS

SEC. 101. Funds are hereby authorized to be appropriated for fiscal year 1983 for the use of the Armed Forces of the United States for procurement in amounts as follows:

ARMY

For the Army: Aircraft: $2,745,914,000; Missiles: $2,846,000,000; Weapons and tracked combat vehicles: $5,030,685,000; Ammunition: $2,633,384,000; Other procurement: $4,567,491,000.

NAVY

For the Navy: Aircraft (including aircraft for the Marine Corps): $11,582,300,000; Weapons (including missiles and torpedoes): $3,901,600,000; Naval vessels: $18,648,300,000; Other procurement: $3,970,156,000.

MARINE CORPS

For the Marine Corps: Procurement (including missiles tracked combat vehicles, and other weapons): $2,300,700,000.

AIR FORCE

For the Air Force: Aircraft: $17,756,700,000 of which $186,100,000 is for the United States contribution of its fiscal year 1983 share of the cost of the acquisition by the North Atlantic Treaty Organization of

the Airborne Early Warning and Control System; Missiles: $6,827,900,000; Other procurement: $5,845,200,000.

DEFENSE AGENCIES

For the Defense agencies: For procurement: $890,284,000.

CERTAIN AUTHORITY PROVIDED SECRETARY OF DEFENSE IN CONNECTION WITH THE NATO AIRBORNE WARNING AND CONTROL SYSTEM (AWACS) PROGRAM

SEC. 103. Section 104 of the Department of Defense Authorization Act, 1980 (Public Law 96–107, 93 Stat. 804), is amended by striking out "fiscal year 1980" both places it appears and inserting in lieu thereof "fiscal year 1983".

* * * * * * *

DEPARTMENT OF DEFENSE AUTHORIZATION BILL FOR FISCAL YEAR 1983—DEPARTMENT OF THE AIR FORCE

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Tuesday, March 2, 1982.

The subcommittee met, pursuant to notice, at 10 a.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. SAMUEL S. STRATTON, A REPRESENTATIVE FROM NEW YORK, CHAIRMAN, PROCUREMENT AND MILITARY NUCLEAR SYSTEMS SUBCOMMITTEE

Mr. STRATTON. The subcommittee will come to order.

Today we begin our annual budget review and oversight hearings with respect to Department of Defense [DOD] procurement plans for fiscal year 1983. During the month of March, we will review aircraft, missiles, weapons, tracked combat vehicles, ammunition and other procurement programs, which were added to the committee's responsibilities in the last authorization legislation, that total some $70 billion. Another $19.3 billion for procurement will be considered by the Seapower Subcommittee.

There have been plenty of reminders from the media and from some of our colleagues in the House, and even some members of our committee, that the fiscal year 1983 defense budget is larger than usual, both in total obligational authority [TOA]—authorizations and appropriations—and in planned outlays—spending.

The President has requested increases across the board, including pay, operation and maintenance [O. & M.], research and development [R. & D.], and procurement. By my analysis, the fiscal year 1983 requests for all procurement items total some $24 billion above fiscal year 1982 levels.

The lion's share of the $24 billion procurement increase—about $10 billion—falls within the Shipbuilding and Conversion, Navy (SCN) account, where $2.5 billion is budgeted for two Trident submarines, $6.8 billion for two Nimitz carriers, and additional funds are requested for battleship reactivation and carrier service-life extension. These funds are requested in order to reach a 600-ship Navy by the end of this decade.

Principal increases to procurement accounts within this subcommittee's jurisdiction fall primarily within the strategic area, to modernize and improve the strategic triad, command, control and communications, and for strategic mobility.

Within the $14 billion in increases over fiscal year 1982 that we will consider are the following Air Force items:

Air Force Increases

An additional $2.2 billion for the B-1B bomber;
For KC-10 tanker cargo aircraft, $790 million;
For C-5 cargo aircraft, $800 million;
To accelerate KC-135 aircraft reengining, $257 million;
For B-52 modifications, $100 million;
An additional $1.4 billion for MX missile procurement;
For ground-launched cruise missile procurement, $190 million;
For the Global Positioning System, $102 million;
For the defense support (satellite) program, $380 million; and
For special programs, $790 million.

As Senator Dirksen used to say, "Those kinds of numbers can add up to real money."

These additional investments in strategic and C^3 hardware amount to $7.0 billion, or about half of the $14 billion in procurement increases to be considered by the Procurement Subcommittee. I should note that all but three of these items—the B-1B, the C-5 and the MX—are programs continued from prior years.

Army Increases

The President's fiscal year 1983 budget also increases investment in tactical forces, especially those programs related to the Rapid Deployment Force (RDF) and readiness and sustainability. Major increases include:

For AH-64 attack helicopters, $368 million;
For UH-60A multiyear procurement, $147 million;
For RC-12D aircraft, $41 million;
For additional aircraft spares, $259 million;
For the Patriot missile, $200 million;
For laser Hellfire missiles, $135 million;
For the multiple launch rocket system, $241 million; and
For additional Pershing II tactical nuclear missiles, $304 million.

In addition, Army weapons and tracked combat vehicles procurement will increase by $1 billion. Army ammunition increases by $337 million.

The above increases for the Army—most of which relate to beefing up the RDF account—amount to another $3 billion. Again, these increases are continuations of ongoing programs.

Navy and Marine Corps Increases

For the Navy and the Marine Corps, major increases include:
For AV-8B procurement, $101 million;
For more efficient F/A-18 procurement, $451 million;
For more efficient SH-60B, LAMPS III procurement, $299 million;
For C-2 COD aircraft procurement, $268 million;
For existing aircraft modifications, $384 million;
For additional spares and repair parts, $540 million;
For additional tactical missiles, $761 million; and

For Marine Corps ammunition, vehicles, missiles, and other equipment, $569 million.

The above major increases total $3.4 billion.

For the Air Force, major increases in procurement for nonstrategic systems include:

For the ongoing A-10, F-15, and F-16 programs, $141 million, $499 million, and $80 million, respectively;

For tactical missiles, $404 million; and

For electronic communications equipment, $322 million.

The above increases total $1.4 billion.

In addition to the major increases noted above, there are numerous smaller increases reflecting inflation changes. There are also offsets resulting from the elimination and reduction of ongoing procurement programs.

The Department of Defense plans to expand the use of multiyear contracting from three programs in fiscal year 1982 to 17 programs in fiscal year 1983. Because of the insistence of the Appropriations Committees that the termination liability for multiyear contracts be fully funded, the budget contains $578 million for this purpose, which may never become an outlay.

I have mentioned the above details for two reasons: First, to illustrate just what programs would have to be cancelled or deferred indefinitely if defense obligational authority is frozen at fiscal year 1982 levels, as has been suggested by Senator Helms and a number of other Senators; second, to illustrate the futility of the hope that a substantial reduction can be made in the projected deficit for fiscal year 1983 at the expense of defense procurement.

I think it is also well at a time when we are transfixed by the budget and the deficits and the dollar figures that we ought to focus on the amounts of money that are contained for each particular program right at the outset, instead of some of the elaborate explanatory material that we have usually started with in the past.

If there is a commitment to a 600-ship Navy, to 12 to 14 Navy battle and air groups, to a modernized Air Force as promised in 1974, to a less hollow Army, to strengthening the Triad, to closing of the window of vulnerability that we still have not even begun to shut, to strategic airlift, and to a Rapid Deployment Force, then a freeze is out of the question.

Obviously, if the $24 billion increase in procurement TOA does not take place, all of these initiatives will have to go by the board. Although, I would point out that the TOA does not really affect the deficit for 1983, which is what Senator Dole and others are concerned about.

But what would we theoretically save in terms of the deficit if there were to be no increase in procurement outlays during fiscal year 1983? Freezing shipbuilding (SCN) would save $.50 billion; freezing all other procurement would save $1.96 billion, for a total effect on the fiscal year 1983 deficit of $2.46 billion, assuming no costs due to program termination or disruption. That obviously would not make a great impact on a deficit of between $91 billion and $120 billion, depending on which budget office you listen to.

If all procurement, including SCN, were reduced to zero during fiscal year 1983, the impact on the fiscal year 1983 deficit would

only be a minus $10.7 billion! This is because only 14 percent of procurement appropriations are actually spent in the first year.

If one sets a goal of $10 billion reduced defense outlays, from whence are the cuts in defense to be made? From pay reductions? O. & M. reductions? R. & D. reductions? Family housing reductions? To achieve such a goal we will have to cut deeply into those vital readiness and morale areas.

Our hearings today begin with a presentation of strategic programs contained in the Air Force and Navy budget requests for the next fiscal year. Tomorrow morning we will take up the requests for tactical nuclear forces procurement, which will be followed by a review of strategic command, control and communication (C^3) programs in the afternoon. On Friday we will consider all items related to airlift.

We have a lot of ground to cover in just a few days. So that we can prepare ourselves for possible battles ahead, on the House floor and elsewhere, I hope that we will have a good attendance at the hearings. To this end, I have tried to leave Mondays and Fridays free so that members who are running for reelection may be assured of plenty of opportunity to come back next year.

Mrs. Holt, do you have anything to add?

Mrs. HOLT. No, Mr. Chairman. You have covered it very well and stated it beautifully. Carry on.

Mr. STRATTON. Thank you very much.

So, our first witness this morning is Lt. Gen. Kelly Burke, USAF, Deputy Chief of Staff for Research, Development and Acquisition. He will present the various billions and millions of dollars that the Air Force is requesting for this particular budget.

General, if you can do so, you will have to proceed on an unclassified basis because we don't yet have a quorum to permit us to go into closed session; so, if you could eliminate those important items that appear from time to time in the New York Times, we would appreciate it.

Mr. BENNETT. Mr. Chairman, might I suggest another alternative, which I am using in our subcommittee? We are having a briefing. Is it possible to have a briefing?

Mr. STRATTON. We have honed our schedule so carefully that I am not sure that we can do that.

Mr. BENNETT. It is a suggestion. I am here to make your quorum and you don't have a quorum yet. I am presiding over another meeting which is a briefing.

STATEMENT OF LT. GEN. KELLY H. BURKE, USAF, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT, AND ACQUISITION, DEPARTMENT OF THE AIR FORCE

General BURKE. We are prepared to proceed at an unclassified level. I think the really interesting issues are unclassified. It is when you get into the arcane details that it is classified.

As you noted in your statement, Mr. Chairman, the budget for fiscal 1983 is significantly larger than that presented in years past. I am here, of course, to represent the Air Force in defense of that budget.

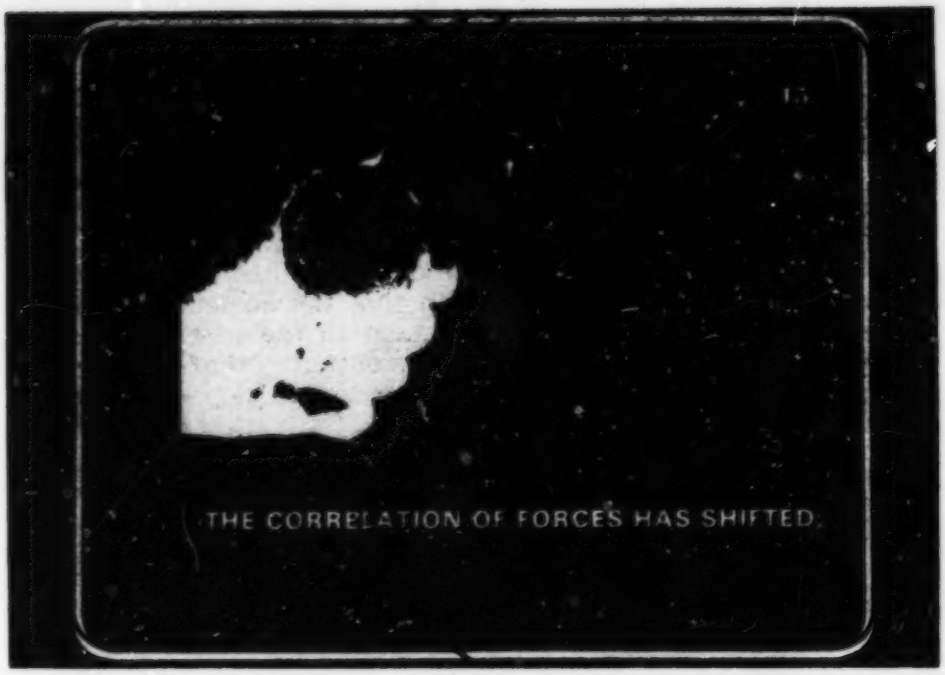
I think any reasonable person has to deplore the circumstances that call for these increased expenditures. I think we would all like to see that money spent for more productive and peaceful purposes. At the same time I think we have to recognize that defense is the first business of the Government and given the somewhat dangerous and disorderly nature of the world in which we live and which we share with a powerful and implacable adversary, it is my opinion that what we are looking at is the minimum necessary to address the basic security needs of the country. In no small measure, that is predicated on the observation that the Soviets have outinvested us in terms of capital investment in the past 10 years by over $400 billion. That is an input. The output is that they outproduce us two to one, three to one or four to one, depending on the equipment involved.

Mr. STRATTON. I haven't had a chance to take a look at your statement, but it looks as though you have had a lot of colonels and captains sitting up nights writing this stuff.

I think—without intending to demean it—what we need to do is to get to the dollars and cents for each specific item as quickly as we can. I think we have had a couple of weeks of overviews in the committee. Rather than go through this document of yours, which looks as though it is 50 or so pages of general discussion, and in view of our time, it would be very helpful if you could just sort of summarize that and then let us get into the specific weapon systems.

General BURKE. I did not intend to even attempt to summarize that. That covers the entire research, development, and acquisition account. It provides background primarily for the staff.

Today we will begin a series of presentations which are shown here on this briefing chart. Specifically, after a couple of introductory charts, I would like to move into the review of the bomber leg and, time permitting, we will follow that with a discussion of the intercontinental ballistic missile leg; and then at later sessions we will deal with other subjects.



Not to talk about threat or balance of military forces—I note the committee has heard a great deal about that, particularly the shift that took place in the 1970's—I was struck by this excerpt from Red Star, the official Soviet military journal, which I came across just recently and which presents, their view of what took place during the 1970s. I thought I would share that with you because that really undergirds what we are trying to do with our budget.

Mr. STRATTON. That shift is not in our direction, I take it?

General BURKE. While I would agree with the first half of that, I don't agree with the second half of that. I think that is what we are all concerned with.

BUDGET PRIORITIES

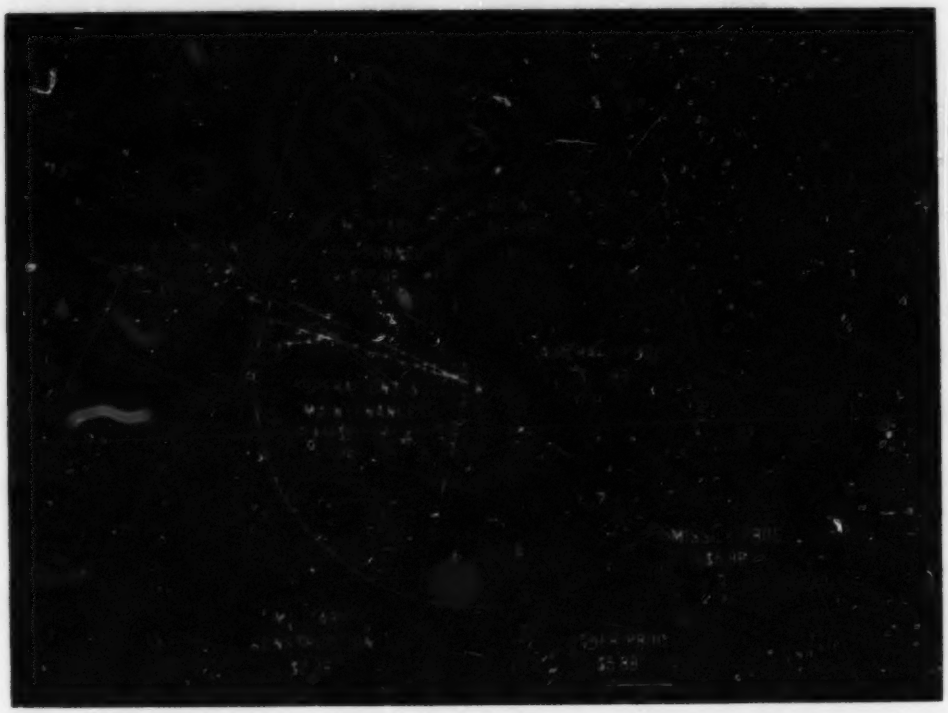
With that in mind, the Air Force set about addressing the 1983 budget. We determined a set of priorities which consists of what we talked about in 1982. I want to touch on this briefly before we go to specifics, to give you a frame of reference for what we are doing and why.

First, we are going to look after our people. People are basic to what we do and we want to make sure they are taken care of. We had good success this past year in recruiting people and retaining people.

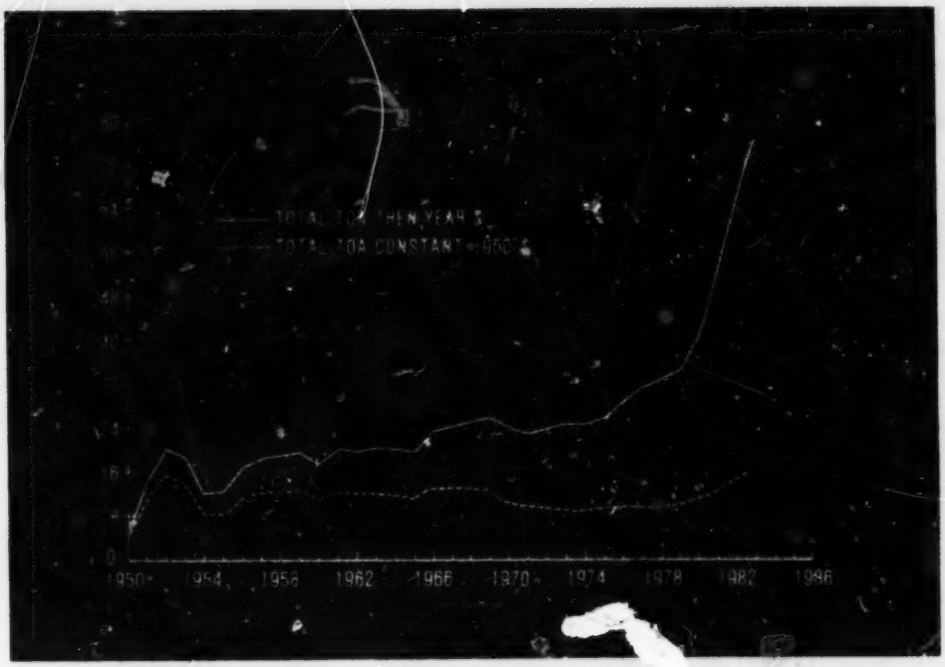
The Air Force is responsible for two legs of the Triad. Given the steady shift against us in that, we think it is imperative that we halt that and begin to close that window of vulnerability of which you spoke. We think it is incumbent on all of us in the military to make sure that we have all the readiness and sustainability that we can have with existing forces before we begin adding forces. We

have done that consistently for the past several years and continue in the 1983 budget.

I think the major element of readiness and sustainability is proper airlift. Of all the shortages the country has, I think airlift is probably the most severe. I heard General Rogers say yesterday he considered the first 5 days of any war in Europe to be the decisive phase. With that view, you are obviously concerned about getting things quickly and where you want them, and that means airlift.



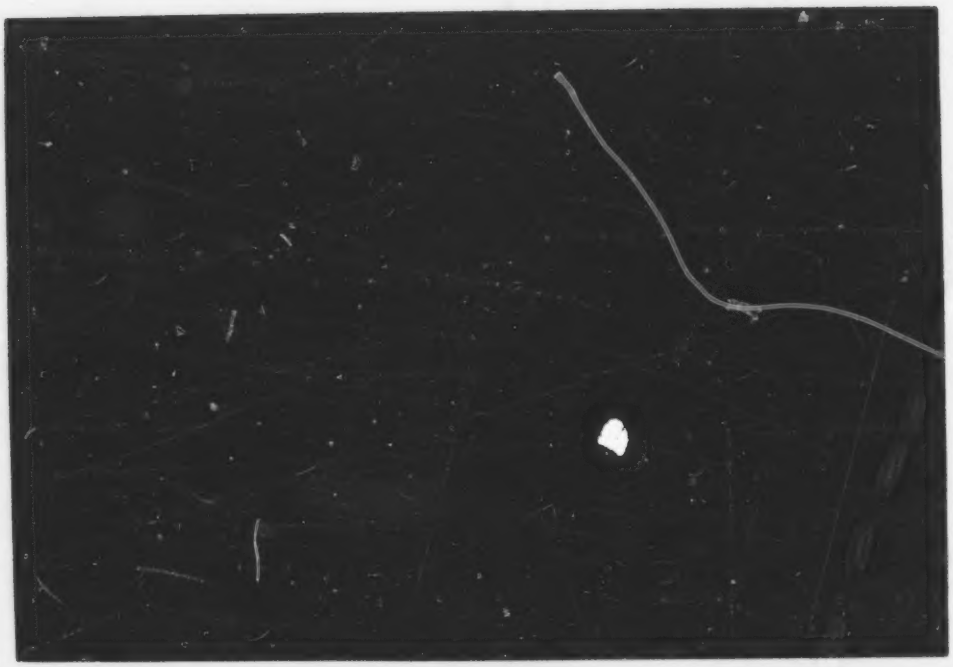
After we had done that, we looked to what we could do to modernize the tactical air forces. Translated to dollars, it came out looking like this. You will be looking at the aircraft procurement account, which grows substantially, the missile procurement account, which grew even more and, finally, the other procurement account for the first time this year which grew a relatively small amount.



One interesting way to look at this budget is to compare the inflated dollar figure with a constant dollar figure. There, interestingly, although the $78.4 billion is larger than any number we have seen for the Air Force in constant 1950 dollars, we are now about where we were in 1952. As a percentage of the gross national product, this year's budget is about half of what it was in 1952.

One thing that I think should be of particular interest to the Procurement Subcommittee is what is the ratio of what the services are spending to operate this year as opposed to what they are investing for the future. A fairly simple way is to split that between the operating account and the investment account.

Back in the 1970's we got down to where we were putting as little as 38 percent into investment, investment in research and development and acquisition and military construction. Our funding position has improved. We now have increased that to 57 percent this year and we would project that to grow in the future years, and that is a healthy trend.



Another trend which I think is important is the ratio between research and development and procurement of missiles and airplanes. That may sound like heresy, but I have always thought we had too much here (R.D.T & E.) and not enough here (Aircraft and Missile Procurement) [indicating]. We are trying to push that up. It is going up to the highest level in history. This year it gets up to 69 percent for procurement and only 31 percent for research and development. Even so, 1983 is something of an anomaly, in that by coincidence our five larger R. & D. programs—the B–1, the MX, the Space Shuttle, ASAT, AMRAAM—all peak in 1983, so what you would see if you projected these 5 years is actually a decline in the research and development and a steady growth in procurement. This will go up sharply in the next few years.

Mrs. HOLT. Mr. Chairman, may I interrupt? I move that the chairman be authorized to go into executive session for today and one subsequent day of testimony for the purpose of receiving national security information.

Mr. STRATTON. Under the rules, the rollcall of the vote is automatic. Mr. Klein, will you call the roll?

Mr. KLEIN. Mr. Stratton.

Mr. STRATTON. Aye.

Mr. KLEIN. Mrs. Holt.

Mrs. HOLT. Aye.

Mr. KLEIN. Mrs. Byron.

[No response.]

Mr. KLEIN. Mr. Hillis.

Mr. HILLIS. Aye.

Mr. KLEIN. Mr. Mavroules.

[No response.]

Mr. KLEIN. Mr. Badham.

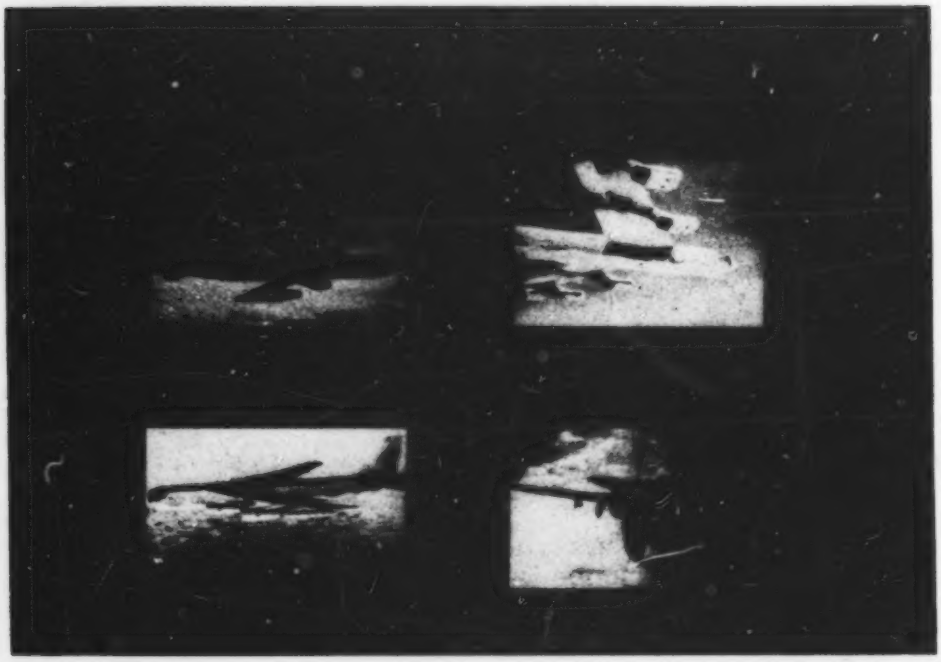
Mr. BADHAM. Aye.
Mr. KLEIN. Mr. Leath.
Mr. LEATH. Aye.
Mr. KLEIN. Mr. Courter.
Mr. COURTER. Aye.
Mr. KLEIN. Mr. McCurdy.
[No response.]
Mr. KLEIN. Mr. Kramer.
[No response.]
Mr. KLEIN. Mr. Hertel.
[No response.]
Mr. KLEIN. Mr. Hunter.
Mr. HUNTER. Aye.
Mr. KLEIN. Mr. Price.
[No response.]
Mr. KLEIN. Mr. Bennett.
Mr. BENNETT. Aye.
Mr. KLEIN. Mr. Chairman, the vote is 8 ayes and no nays.
Mr. STRATTON. The motion is agreed to. That will provide the authority when we need it to go into executive session, but we will continue at this point in open session.
Go ahead, General.
General BURKE. That was a very brief introduction.

PRESIDENT'S STRATEGIC PROGRAM

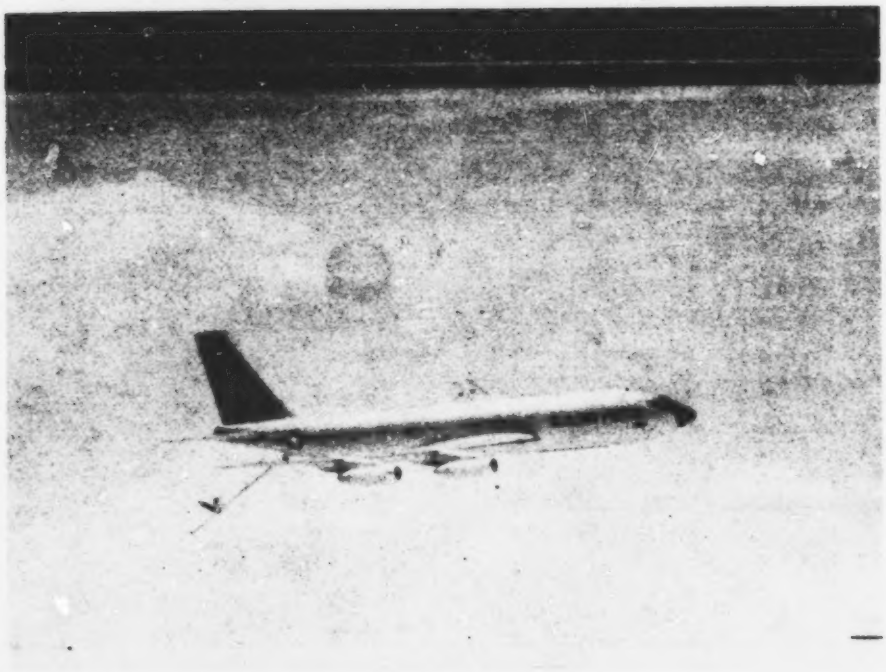
I would like to move into the specifics of today's briefing, beginning with the strategic bomber force which, of course, is one part of President Reagan's proposed five-part strategic modernization effort.

OVERVIEW

I would like to do it by talking about what we have, just to remind this committee of what we have in strategic bombers today, what we are doing about looking after their sustainability, very briefly, and then modernization and procurement efforts.



We have four types bombers in the inventory, three of which are versions of the B–52. We have 75 of the B–52D's, delivered in 1956; 151 of the B–52G's, and 90 of the newest, the B–52H's. Those were delivered in 1962; the newest of the B–52's are 20 years old. We also have 60 of the FB–111's, which is a slightly larger version of the tactical fighter with the same nomenclature.



Supporting those bombers, but also available to support all our tactical fighters and all of our strategic airlift forces, are the KC-135's, and we have 615 of them.

READINESS AND SUSTAINABILITY

Just a few words about readiness and sustainability:

Even in the leanest of times these forces were ready. SAC kept the forces at a high state of readiness. We keep 30 percent on alert, ready to go on a few minutes' notice. In times of tension and heightened concern, that can be increased and they can be dispersed for better survivability.

We begin to put more focus on sustainability because these forces are also available for worldwide power projection and are used for that. We have in the past years made substantial increases in spare parts for B-52's and KC-135's. In 1980 we were spending $33 million for that. In 1982 that is up by a factor of 10, about the same in 1983.

We have been doing more realistic testing. We flew a very interesting mission last fall, the Bright Star exercise in Egypt. We flew six B-52's from North Dakota nonstop to Egypt, where they delivered actual loads of conventional bombs with split-second timing, right on the target, and then returned nonstop to North Dakota, about a 35-hour flight. It is illustrative of the kind of reach you have with those airplanes.

I would like to move now to the force modernization issues, and I would like to begin with an outline of the President's proposals and the Congressional response to each of those proposals.

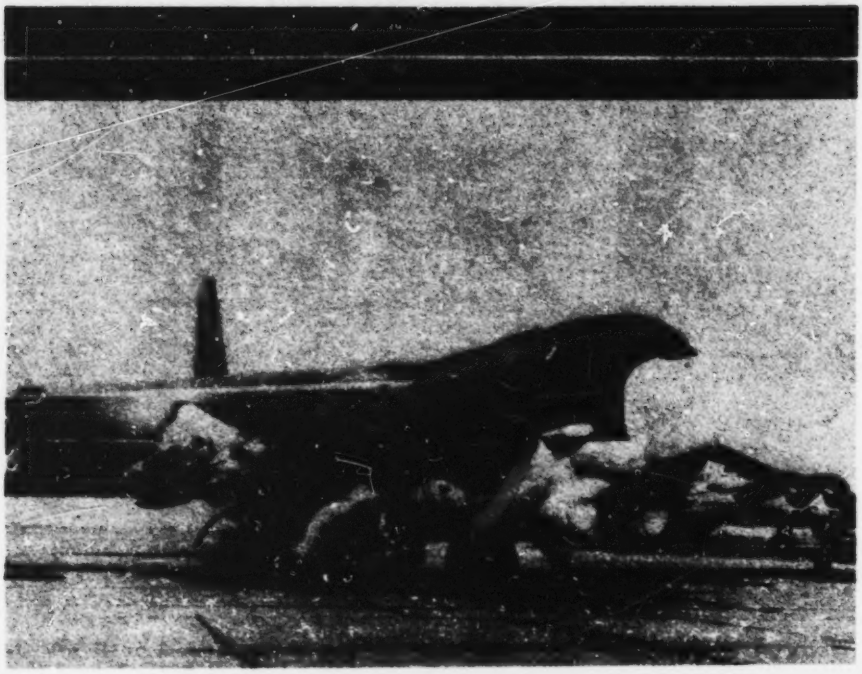
The President started by saying he wanted to improve capability for the newer B–52G's, and H's. In general, Congress went along with that, although they made some reductions last year, suggesting they would like to see those airplanes march toward retirement at a reasonable point. The President proposed early retirement of all 75 B–52D's and the Congress said they would like that slowed down a little, and it has been slowed down a bit. We will keep some B–52D's until we get the B–1's in inventory.

The President proposed deployment of 100 B–1B's with an IOC in 1986. Congress, I think, was generally supportive of that; however, as far as the budget wound up, $330 million was taken from the 1982 request and that has led to the reprograming that you will be receiving shortly adjusting those funds in the 1982 budget.

The President also proposed the development of a follow-on bomber—the advanced technology bomber, incorporating Stealth features. Congress supported that, even added some money.

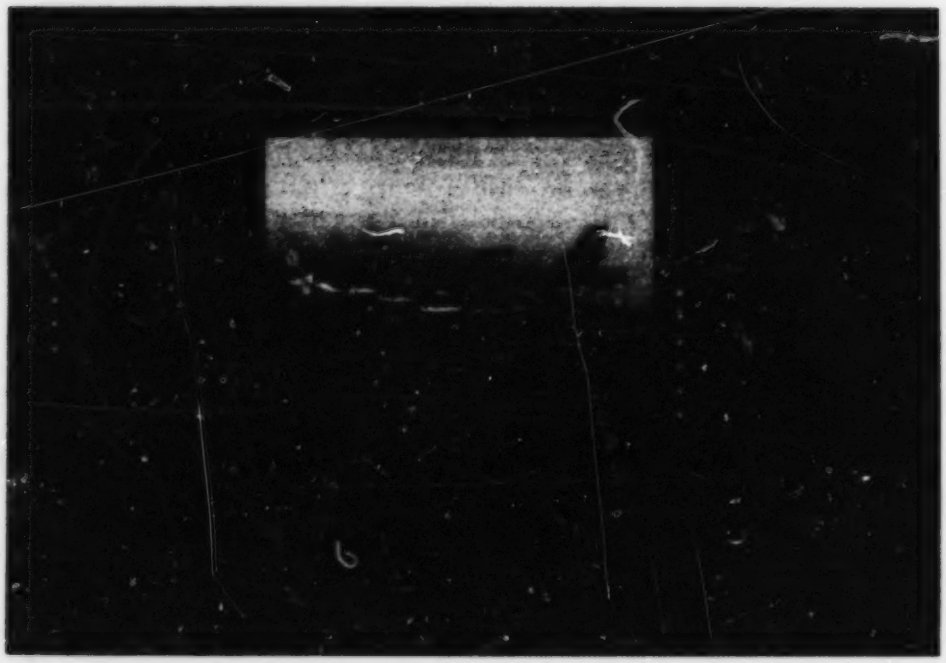
The President said we will deploy over 3,000 cruise missiles, and Congress supported that.

The final element was the reengining of some KC–135's. Congress supported that fully and also added some money to reengine some of them with the used JT3D engines of the 1970's but not at the expense of the basic program. There was generally good support by Congress for the present proposal.



Starting with the B–52 modifications, we will be keeping some B–52's; the G's will stay in inventory until the early 1990's and the H's a couple of years beyond that. That is a good 10 years into the future. People say why are you modifying these airplanes that you are going to be retiring? It is worth noting that with the exception of the B–47, we have never kept another strategic bomber over 10 years. We are planning to get 10 more years out of some pretty old horses. The big thing is to make them capable of carrying the cruise missiles. They will be the primary cruise missile carrier for a number of years.

We have to upgrade the avionics for that role. A lot of the systems you just have to use have 1950 technologies. You have to refurbish them to keep the airplanes safe, reliable and maintainable.



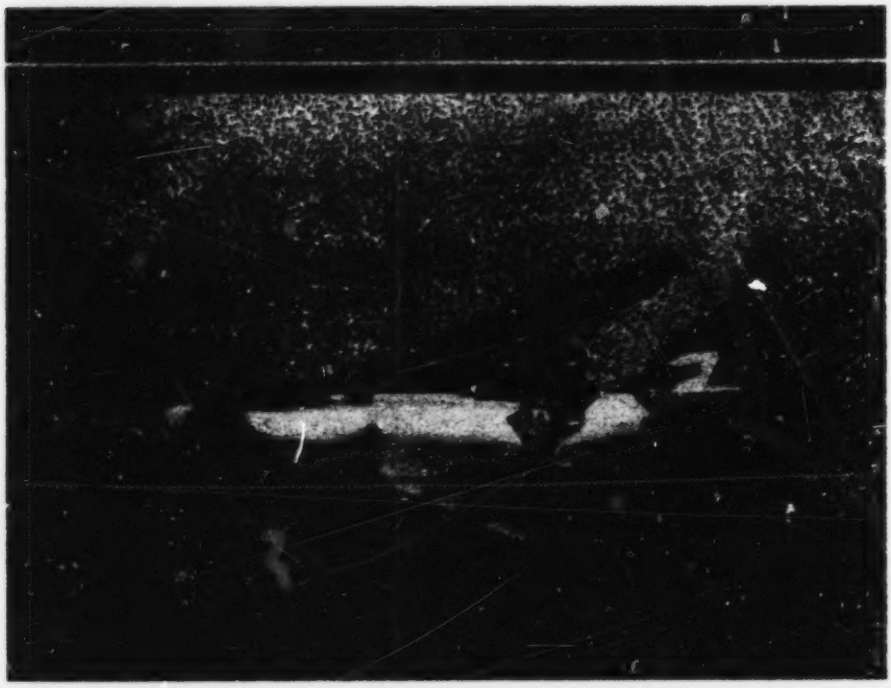
The specifics of the 1983 request is highlighted in yellow. The $554.6 million for procurement for the B–52, the largest amount of that is associated with the offensive avionics system upgrade.

Cruise missile carriage is the next. The class IV modifications refer to the reliability and maintainability modifications.

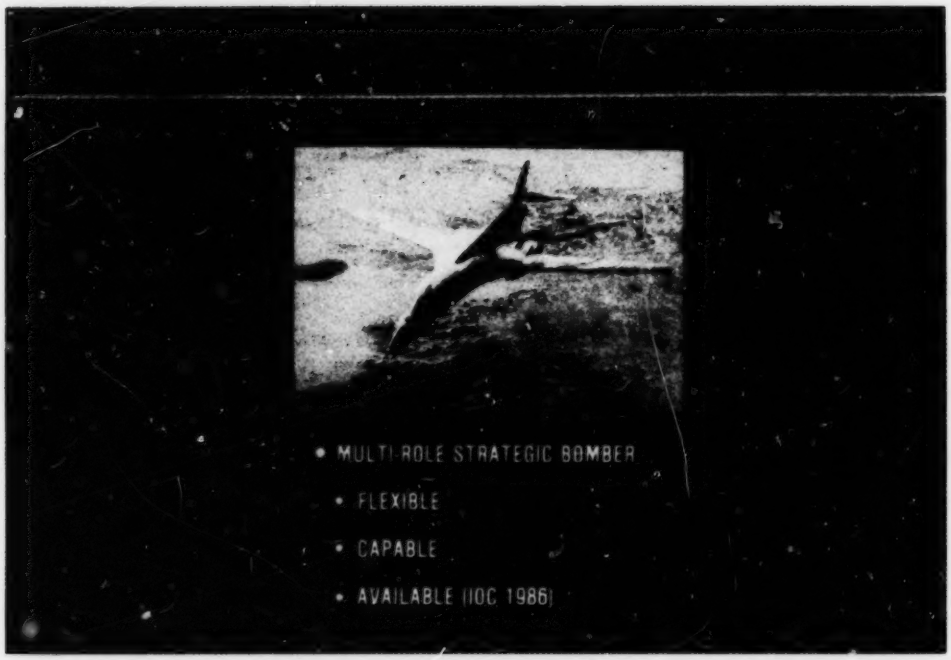
We are adding a tail warning system to our B–52's. They carry a flare dispenser which gives them good protection against infrared missiles, however, they have a problem now as to when they discharge the flares.

We need to add an AMAC, aircraft monitoring and control system, which is needed so that the airplane can handle the new generations of nuclear bombs and missiles with various security features that have been incorporated.

Finally, we are requesting a little money to increase the conventional capability of some of the B–52G's. As we retire the B–52D's, we propose to modify some of the G's and give them a primary conventional role. Right now they can carry 27 750-pound bombs internally. This will let them add 24 750-pound bombs externally.

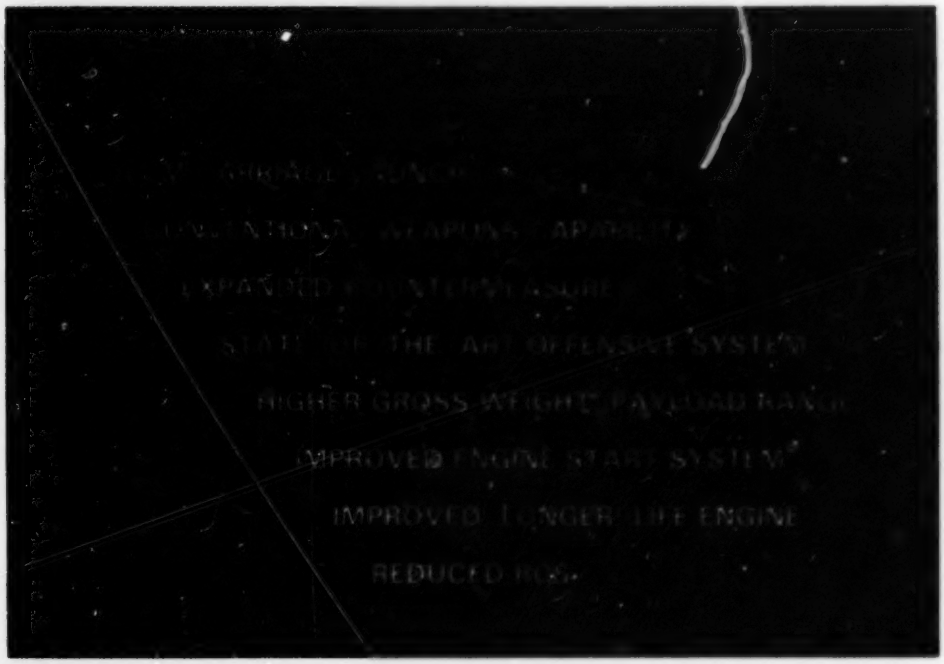


Turning now to the B–1, Congress in its fiscal year 1981 authorization and appropriation bill directed us to build a multirole aircraft. We have done that.



The airplane is flexible; it is a penetrator; it will be a cruise-missile carrier, and it will have conventional capability, including maritime support capability; it is going to be capable of penetrating the most sophisticated Soviet defenses that we project well into the 1990's and then will be available for a variety of important roles, including the conventional and cruise-missile carriage roles into the next century. I expect it will last us at least 30 years.

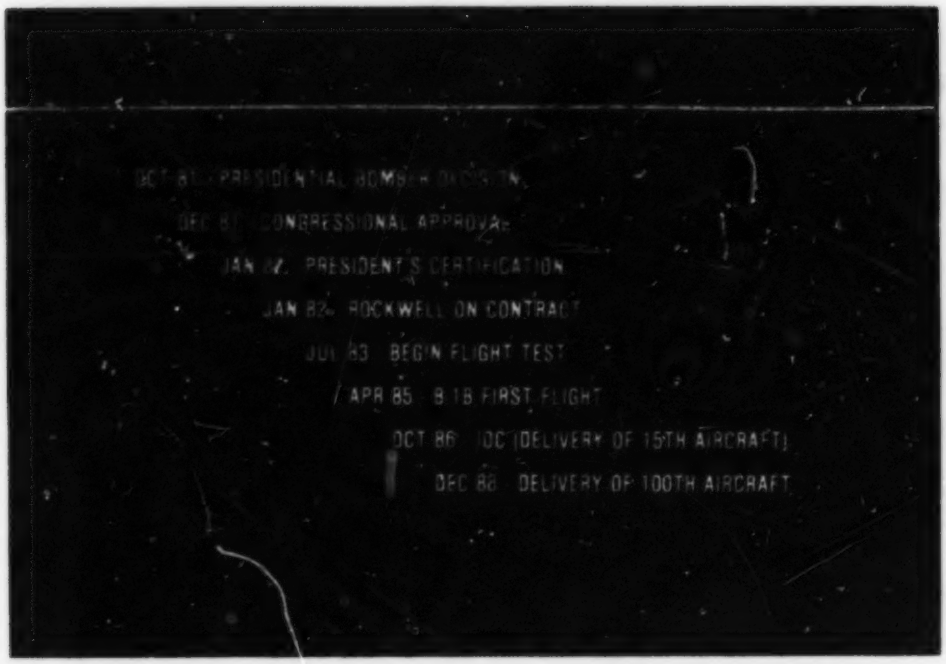
The most important thing is that it is an airplane that can be obtained in a fairly early period of time. These are the changes we made from the B–1A that you are familiar with, sir, back in the 1970's. First, we are making it capable of carrying the cruise missile.



Second, we are making it capable from the beginning to carry various conventional weapons. We are going to add to our countermeasures system. It already has the finest electronic countermeasures system ever built, but since 1977 we have increased our understanding of Soviet air defenses, so we will upgrade that a bit.

The B–1A was to take the best off-the-shelf avionics that existed back in 1970 when it was started; that was the plan. We still are going to take the best off-the-shelf avionics but now there are better ones available. Primarily, we will take the things that we have developed for the B–52 modifications and put them in there. We also will be able to increase the gross weight up to 477,000 pounds, provide a better engine-start system and more durable, longer-life engine and, most importantly, we are going to make a substantial reduction in the observability of the airplane on radar.

This, coupled with the superior electronic countermeasure system, gives us the highest confidence that this will be an effective penetrator. We have confirmed that over and over again in our actual testing.



Looking at some of the important B–1 milestones, the President made a decision in October; Congress approved it in December. There was a requirement under the so-called Nunn amendment that the President needed to certify to the Congress that this airplane could be built with a scheduled 1986 IOC. The President signed that letter on January 18, personally certifying that we could and would do that. That was a precondition to going on contract.

We are on contract with Rockwell now and are about to go on contract with the other contractors. We expect to begin our flight test program in July 1983 using a modified B–1A with new avionics.

The first B–1B, the brand new production airplane, will be flown in April of 1985. We will have the first squadron in October 1986, and the full buy will be completed in December 1988. These are the contractually binding numbers and the contractor is working toward 3 to 6 months acceleration of all of these. We are optimistic that we can make it.

Mr. STRATTON. We have just one B–1 that can be flown?

General BURKE. We are going to fly two of them, sir. We will fly the B–1A No. 2 and No. 4. No. 4 had both offensive and defensive avionics. We will replace that with a new suite and fly it. No. 2 is the load structure airplane.

You might be interested to take a quick look at this. This happens to be the first production part for the B–1 which was fabricated and delivered, tested, and inspected by quality control on February 19. So, the B–1 is in production.

Mr. STRATTON. Is that cardboard?

General BURKE. No, that is aluminum.

Mrs. HOLT. Did they stay within the cost on that?

General BURKE. Absolutely. There was a news account by Evans and Novak that there has been a cost increase in the B–1.

Mr. STRATTON. Four hundred million dollars or something?

General BURKE. They started by saying $600 million. I called them, and asked, "Where did you get this number?" He said, "I got it from our source." I said, "It is wrong." He said, "I will go back to them." I called the next day. He said, "The $300 million is the correct number." I said, "That is $300 million less wrong, but it is still wrong."

I will tell you where they got it. When we came over for the 1982 budget we had projections for 1983. Actually, this was some $300 million larger than you projected. The reason was because $330 million was cut in 1982 and we added it back, so it did not change the total.

Looking again in 1983, we move into production requesting almost $4 billion. That buys only seven airplanes; that is always shocking when you look at the beginning of a program. That is because of nonrecurring costs.

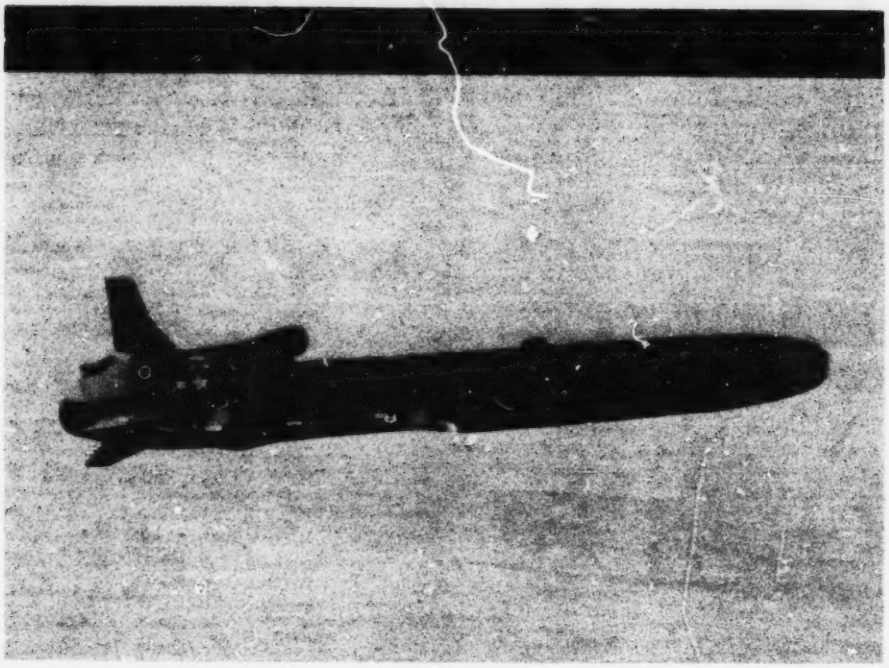
This other is tooling and nonrecurring cost. That number comes down. Actually, the incremental flyaway cost of the 100th airplane will be down to $93 million.

ATB STATUS

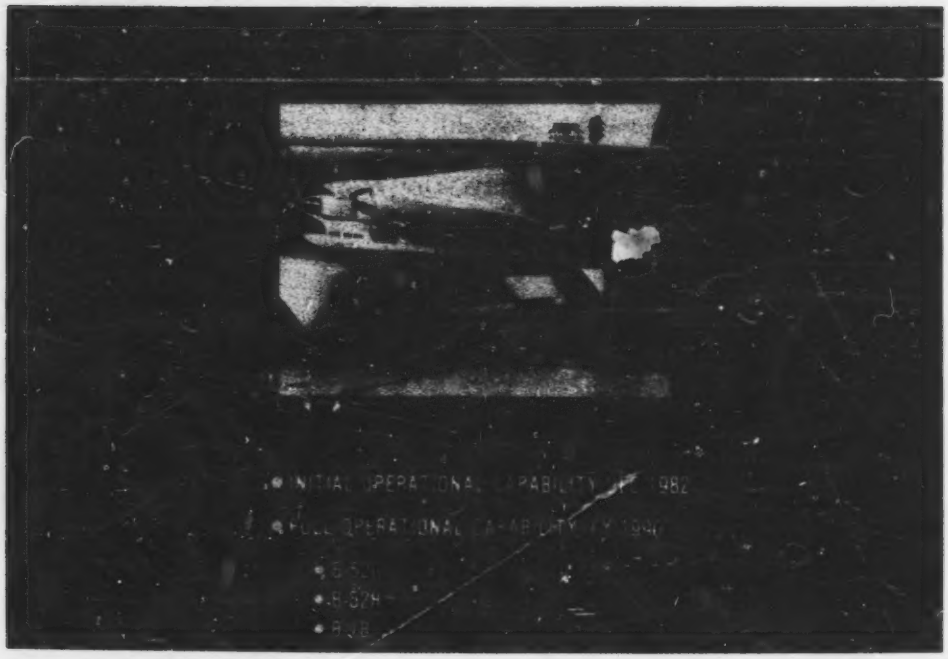
The President also said we would move forward with the advanced technology bomber, ATB, and we are doing that. In October we announced a contractor team. We have our management team together. We are working on program definition; but, most importantly, in the area of risk reduction there is some new ground to be

plowed. We want to make sure we get that straight before we move forward.

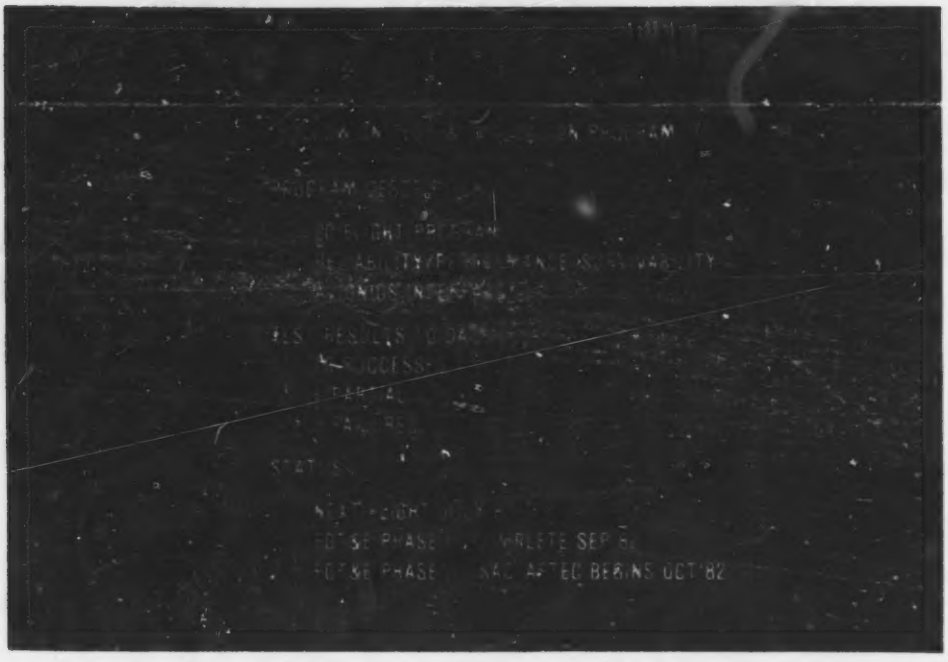
We are working toward an early 1990 initial operating capability. We are on schedule for that. We think that is about the right pace. We have not restrained this program for want of money; it is technology that is the pacing item.



Cruise missiles are very important to us. We plan to buy over 3,000 in the next several years. We actually got delivery last September on our first units, at our first base, Griffiss Air Force Base, in upstate New York, Mr. Stratton, as you well know. We had a minimum capability as early as September 1981. We will have that full squadron equipped by the end of this year, then we will move forward converting B-52G's and B-52H's and the B-1's, completed by 1990.



Mr. STRATTON. Are these conventional warheads?
General BURKE. No, sir, these will be all nuclear warheads.

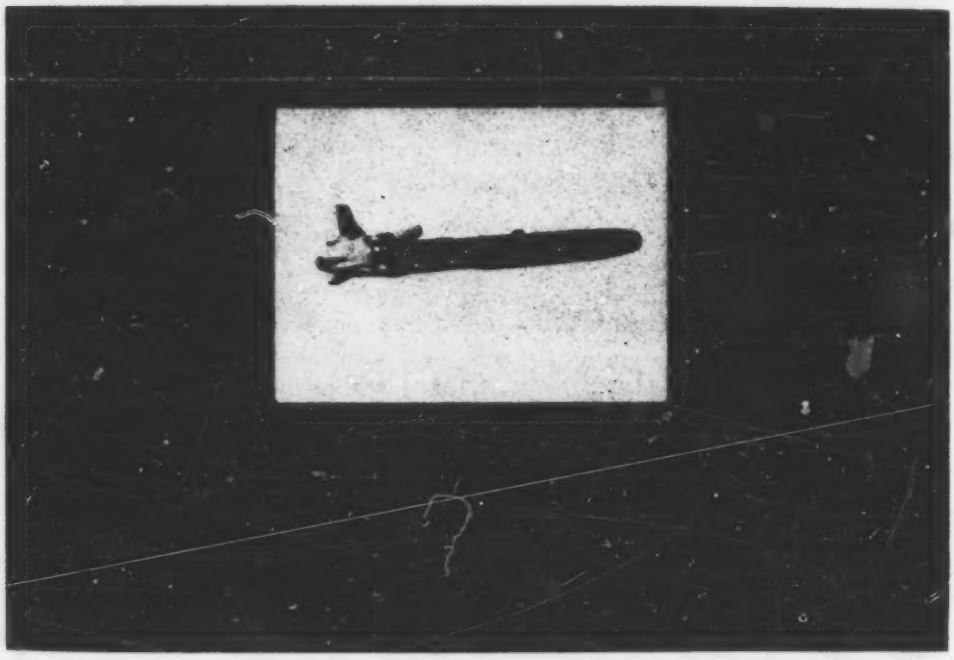


Last year we were in the fairly early stages of the operational test and evaluation of the cruise missile. Things were looking a little questionable at that point. We had a number of failures. We were all concerned. I would not say they were atypical of the devel-

opment program, but we didn't have as much confidence as we wanted.

Since then, we have had a very, very good year of testing the ALCM. The last 10 flights have been successes. The first early flights were off B-52's that I would call jerryrigged. Starting last June we got delivery of the B-52's that had been modified for the cruise missile carrier role. We have flown six tests and all six have been successful.

I think this testing is in hand and we are going to bring this in on schedule.



In 1983 we are proposing to build 440 missiles at a cost of $664 million; 440 is the rate of production and we will be continuing with that throughout this decade.

The KC–135 is a remarkable airplane; it is not only a strategic force but also supports fighters and tactical aircraft and is a vital element of much of our planning. Really, it is a remarkable airplane. They came into the inventory in the late 1950's, early 1960's, but because we don't fly them a whole lot, they are projected to be structurally airworthy well into the next century, well past the year 2025. They also remain very effective for their role.

• ADDS REFUELING CAPABILITY AT LEAST COST
• ADDITIONALLY
• ADDS OPERATIONAL FLEXIBILITY
• REDUCES ENVIRONMENTAL IMPACT
• CONSERVES FUEL
• BEGAN MOD FEB 81
• FIRST FLIGHT AUG 82

Thus it makes a great deal of sense, to make some modifications rather than replace them. The major thing is to reengine them with the CFM56. We are also taking the opportunity to do a few other things by putting on a new landing gear and so forth.

Mr. BADHAM. On the reengining, General Burke, I understand that there are old 707's that commercial airlines are willing to practically give away with the JT3D engines, at just a fraction of the price of the CFM56 and have a faster turnaround time as far as putting them in and taking them down. They give you somewhere between 70 and 80 percent of the capability of the CFM56 at a tremendously reduced cost.

General BURKE. Yes, sir. We came over in 1981 and we asked to buy 18 donor aircraft for that purpose and Congress supported that. What we did was reengine the non-KC-135's. We have some other 135's in other activities. Our plan was to keep a common engine in the SAC KC-135 force because they deploy all over the world and it lessens the logistics burden.

In the 1982 budget we considered buying some of each. We decided, instead of doing that, we would move toward an efficient production rate on the CFM56. That is the way the 1982 budget request came over. Congress added money to buy an additional 28 sets of JT3D engines in 1982 to give them to the Guard, and we are doing that. That is a reasonable thing to do.

Mr. BADHAM. Do you intend to keep on with that? I understand there is a tremendous cost savings.

General BURKE. They are much cheaper; they are also, of course, much less capable. A CFM56 reengined airplane is worth about 1.5 of the unreengined airplane. The JT3D is about 1.1 or 1.2. The CFM56 is considerably better in fuel efficiency, and much, much

better in terms of noise, which is a major problem that we have with the existing airplanes.

The JT3D's would not be allowed to be flown by commercial airlines in this country beyond the mid-eighties. They would not meet the noise and pollution standards. While the Defense Department is not subject to that, we aspire to be good neighbors, too. It was on that basis that we did not request them in the 1983 budget.

Mr. BADHAM. What is the status of the production of the CFM56?

General BURKE. We are installing engines on the first aircraft and we are moving up to the full production rate. We increased our earlier rate for the CFM56 reengining, building to a six-per-month rate, which is the rate that we are sending 135's back for some reskinning work at Wichita. That is the lowest cost we can get. We also got a good price on those engines. Those engines are also going into commercial service.

Mr. BADHAM. The fuel saving can be tremendous.

General BURKE. If we have the whole fleet reengined, we will save approximately 100 million gallons a year.

Mr. COURTER. General, has it ever been proposed that the Air Force change its commercial 707's into some sort of tanker?

General BURKE. I don't think there has been any formal proposal. I have thought about that a little bit.

Mr. COURTER. Is there any merit?

General BURKE. I don't think it is attractive. I think it is much better over the long term to reengine the 135's that we have and make them more productive, with the same operating expenses, than it is to add these additional less-productive airplanes. Then you have to go out to hire crews, maintenance people, add flying hours and so forth.

When you look at not just acquisition cost but also the operating cost, you tend to favor reengining what you have, although I would think if I were a foreign country and didn't have any tankers, I would look very hard at that opportunity to get some. I would not be surprised to see some sold around the world.

Mr. HILLIS. Getting on to the reengining, I have a couple of questions. First of all, the bottom line is capacity. How does the KC-10 fit in and where will we be 5 or 10 years from now?

General BURKE. Our proposal is to buy an additional 44 KC-10's plus the 16 we are now authorized for a total of 60. That is all being procured as part of the general purpose forces and is not aimed at the SAC mission. We are proposing for now to reengine 300 of the KC-135's, which, in effect, adds the equivalent of 150 KC-135's to the fleet.

Additionally, we will be reengining at least 28 other aircraft with the JT3D's that Congress authorized.

Mr. HILLIS. Between the two aircraft, what is your offload capacity between the KC-135 with the CFM56 and the KC-135 with the JT3D?

General BURKE. Starting with the typical mission, 1,500-mile radius mission, and using the existing KC-135 with the old J57 engine as a baseline of one, the CFM56 engine is 1.5 and the JT3D reengine is between 1.1 and 1.2.

Mr. HILLIS. I still am not sure I understand what you said. Are we going to be able to meet the refueling requirement of MAC and SAC with this reengining and the KC-10's?

General BURKE. We are taking a good step in that direction. My own guess is that the country will eventually wish to reengine all KC-135's that we retain in the inventory.

I think it is incredible to imagine that we will take these gas guzzling, horribly noisy, dirty engines into the 21st Century. I am not sure how many aircraft we will retain, but whatever the number I believe, we will reengine them.

Mrs. BYRON. May I ask unanimous consent to be recorded "aye" on the executive session vote?

Mr. STRATTON. Without objection.

Mr. Kramer, do you make the same request?

Mr. KRAMER. Would my colleague from Maryland be kind enough to include my name in the motion?

Mr. STRATTON. Without objection, the gentleman is so recorded.

Mr. HILLIS. Would it make any sense, since the B-52 models are going to be with us for some time, if we look at reengining some of the B-52's with more efficient engines as well, so that they don't have to be refueled so often?

General BURKE. It would, but I think the period of time it would take to accomplish that in juxtaposition against the retirement schedule of the bulk of the B-52's would make that not terribly attractive; however, I think we need to look closely at this.

I mentioned earlier we have 61 B-52G's that we intend to assign to primarily a conventional nonnuclear role, and they would not be part of the strategic forces; they would stay indefinitely. On those I think you could make pretty good argument for reengining.

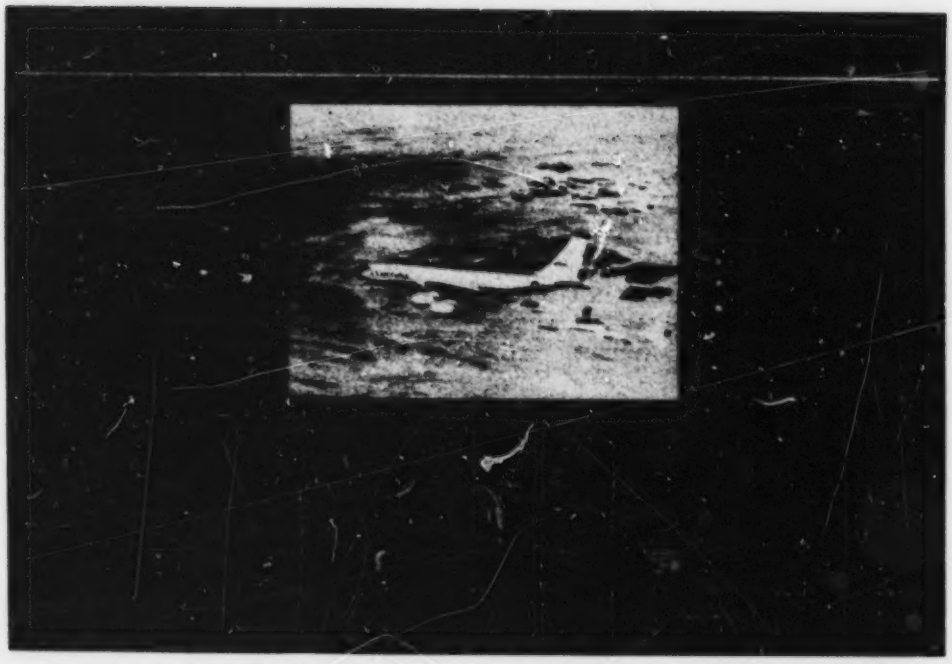
Mr. BADHAM. How far have you gotten on that? In a way, you talked in such disparaging terms about the J57 engine on the KC-135's. Now that we are using it, you have twice as many of those old gas guzzling, dirty engines on the G and H models. Wouldn't a new engine practically pay for itself on the B-52?

General BURKE. They are not on the H. The H has the TF33 turbofan. They are on the G's and D's. It is a pretty large investment. The big difference is that we are talking about getting rid of the G's around 1991. We are talking about retaining these KC-135's until 2025. That is quite a distinction.

Mr. BADHAM. The H model will be around for a longer time?

General BURKE. A couple of years longer.

I think we have covered the reasons for doing this. It is interesting to point out that we provided the first airplane to Boeing just last month. They are working on it now and we expect to fly it this August.



In the budget for 1983 we have $½ billion to really start moving into production. A great deal of that goes for nonrecurring costs. We are still in negotiation. I think we will get more than 20 kits out of that. This takes us out to a total of 300, as I mentioned. This also gets us to the end of our 5-year program.

I would think fairly soon we will be looking at year 1989 and beyond.

Mr. Chairman, that brings us to the end of the bomber leg of the Triad. The next briefing just looks at ICBM's. Would you like to stop and ask questions on this?

Mr. STRATTON. Yes; I think we have a couple of questions here.

During the strategic hearings just completed by the full committee, there were some generalizations made that the B–1B would be a better aircraft than the original B–1. Some persons have advocated that you merely clone the test aircraft and continue production on that basis.

In what ways will the B–1B excel over the B–1 test article and what new equipment or changes will add to this capability, and what equipment or changes will provide this capability, and could you be as specific as possible, because we are obviously going to have to defend this aircraft against a fairly vigorous attack when we get to the floor.

General BURKE. Yes, sir. The major changes are to reduce the radar cross-section and provide the most modern and effective electronic countermeasures suite that we can, which in combination will insure the highest degree of success in coping with even the most sophisticated air defenses well into the 1990's.

Second, we are modifying the airplane for multimission roles, including cruise-missile carriage, from the outset, and conventional roles. We have done some additional modifications which provide a

significant increase in range and payload, and we have also made some relatively minor modifications which are designed to reduce the cost of operation and increase the reliability of the system when we have it.

Mr. STRATTON. The electronics could be added to the old B-1 just as easily as it could to the B-1B, could it not?

General BURKE. Yes, sir. The electronics could have been added to the B-1A and the cruise-missile carriage could be added.

Mr. STRATTON. Reducing the radar cross-section would require some structural changes in the aircraft?

General BURKE. Yes, sir.

Mr. STRATTON. One other question here: Because of congressional direction and a belated sense of urgency, the B-1B program is going to have considerable concurrency with procurement and R. & D., and because of a Senate amendment the President has had to certify, as you just indicated, that the 1986 IOC can be met and that costs will not exceed $20.5 billion in 1981 dollars.

Is a 1986 IOC too optimistic and are we risking possible mistakes and inviting engineering changes by proceeding at the pace that seems to be planned?

General BURKE. No, sir, I don't think it is unduly optimistic at all. I think it is a reasonably conservative development schedule. I might just add that the President in his certification thought the point was worth emphasizing, because he said it twice—we can do that provided Congress supports us at the profile we have asked for. Obviously, if there are major perturbations, we won't be able to do it.

Research and development is often a misleading term. In fact, there is essentially no inventing, if you will, taking place in regard to the B-1B. What we have is a lot of engineering and a lot of integration. We are not inventing anything. Everything that is going on the B-1B, we understand, works; it is in something else or it is already in the B-1A.

The general question is, why are we spending $2.5 billion fiscal year 1981 dollars on development of an airplane that we have already flown? That divides up as follows: $2.5 billion includes $900 million to complete the task that we had planned, but did not complete, in the B-1A program. Much of that goes for very unromantic but very important things like an integrated logistics support system. That takes a lot of planning. It is not critical to flying an airplane but it is certainly critical to maintaining it and operating it for 30 years.

There is another $900 million in there that we would identify as designed to reduce either the cost of production or the cost of ownership over the years. That is a "pay me now or pay me later" proposition. It will save us a lot of money in the long run.

Finally, there is $700 million in there that we can associate with going from the capability of the B-1A to the multirole capability which Congress directed, adding the cruise missile carriage, and adding the new avionics.

Mr. HILLIS. I have always been in support of this aircraft. I notice on the list of changes in the B-1B over the existing old B-1 there would be a greater gross payload, something about faster engine start, but I didn't see anything about more thrust. The im-

mediate thing that went through my mind is, are you degrading the performance of this aircraft by putting more weight on it with the old engine, taxing the engine?

General BURKE. No; it won't tax the engine. The weight increase is from 395,000 pounds to 477,000 pounds, and what that will do is add perhaps 3,000 feet of ground roll on takeoff.

Mr. HILLIS. Doesn't it degrade the performance characteristics of the airplane somewhat?

General BURKE. Not significantly. Of course, you don't have to use it; it is just there available. Essentially all we did was put on a little sturdier landing gear. We used the same landing gear. We just removed less of the metal during fabrication.

Mr. STRATTON. I think we had better go down the list here. Mrs. Holt.

Mrs. HOLT. Thank you, Mr. Chairman.

General, you said we are going to have a reprograming action. I am not sure I understood exactly how that request for transfer of funds relates to the B-1B cost and production schedules.

General BURKE. The Congress in the 1982 markup cut $330 million from the B-1B request. Most of that came out of research and development. At this point research and development is the pacing factor. You have to do that first before you can start building. Unless we get restored all or some of that, we cannot stay on the schedule. We pared that down to a minimum.

What we have asked is that you take about $180 million that is authorized and appropriated for B-1B procurement and shift that into research and development, and also an additional $30 million that was in the B-1B weapon system line and shift that into the B-1B advanced procurement line.

In order to do that, rather than buying the two B-1B's that we had proposed in 1982, we would buy one B-1B in 1982. Rather than buy the 9 we proposed in 1984, we would buy 10. So we would catch up in 1984.

By doing that, we would stay within the overall budget and we would meet our 1986 IOC.

Mrs. HOLT. It does not affect the per-copy cost?

General BURKE. No; it does not. The reprograming is imperative to maintain our schedule.

Mrs. HOLT. The budget request contains no funding for FB-111 modification. How much longer are we going to keep them around? Are we using money that should be used for the FB-111 for the B-1?

General BURKE. We are not spending a whole lot of money for the FB-111's. They are generally in healthy condition and flying well. In recent years we have upgraded their engines, made them more safe and reliable, done some improvement in avionics. We have provided a pretty good simulator for them, all in the past 7 or 8 years. We would expect to keep them healthy and on alert and as part of the strategic nuclear forces for the rest of the eighties.

Then, as we buy the B-1B's and start to buy the advanced technology bombers, we think we would either retire them or probably, more likely, transfer them to the tactical forces. They are very similar to the tactical F-111's and those are much valued by the tactical commanders, particularly in Europe.

Mrs. HOLT. How long will they be around?

General BURKE. Again, they will last well into the next century.

Mrs. HOLT. How about the B-52's, what are we going to do with those? Are we going to destroy them or use them?

General BURKE. We will send them to the boneyard, as it is called, down at Davis-Monthan and retire them. Depending on the status of SALT or START, the strategic arms control agreement, we might have to physically dismantle them to show they are no longer serviceable.

Mrs. HOLT. What will we learn from the B-1A test that will be conducted? You said tests will be conducted with new avionics?

General BURKE. Largely, we will to prove the airworthiness of the design. We have proved the structural integrity and the life expectancy of the airplane. We have proved out a great deal of the defensive avionics in the No. 4 airplane.

Mrs. HOLT. That will be useful.

General BURKE. Yes. Consequently, we have a relatively small flight test program for the B-1B.

Mrs. HOLT. Are any of the things that we have learned in the advanced technology bomber research going into the B-1B?

General BURKE. Yes, ma'am. That has resulted in the reduction of the observability of it. I could say that we have applied enough of what we learned in the B-1A program that we are not building an R. & D. plane for the B-1B, the first airplane produced is intended to go to SAC.

Mr. STRATTON. Mr. Hunter is next, but let me recognize Mr. Mavroules.

Mr. MAVROULES. I ask unanimous consent that I be recorded as agreeing to go into executive session.

Mr. STRATTON. Without objection.

Mr. HUNTER. What do you say the per-unit cost of the B-1 is?

General BURKE. We are proposing to buy 100 airplanes at a cost of $20.5 billion in 1981 dollars, so the total program unit cost would be a little more than $200 million. If you would take the flyaway cost and look at the incremental cost of the last airplane, it is down to about $93 million per copy in those same 1981 dollars.

Mr. HUNTER. Could you explain that to me? I am not tracking you. You take the entire program and divide it by the number of planes, and you have a little over $200 million?

General BURKE. That is right; that is what it would cost us on the average to buy 100 airplanes. Suppose the committee decided they wanted to buy the 101st airplane; that would cost $93 million.

Mr. HUNTER. One of the attributes of the B-1B that we, in fact, utilized in debate on the floor was the fact that it has a much faster escape time than the old B-52, and if you are looking at the possibility of a possible submarine strategic attack or nuclear attack by the Soviets, it has a fast escape time.

My question is, do our tankers, the KC-135, for example, also have a fast escape time? Ultimately, they are going to have to marry up with the B-1B to allow it to proceed on to target.

General BURKE. They are getting a faster escape time. This reengining with the CFM56 provides a considerably faster flyout than the old engine. It is more powerful. Also, and this is an important point, there is sufficient power margin available in the CFM56 that

you can pressurize the airplane at the start of takeoff roll, whereas with the current engine you need every bit of power you can get, so the structure is not pressurized. It makes it harder when you have that pressure inside. That improves with the CFM56.

But an important point to remember about the B-1B is that it has sufficient range and payload that even if for some reason it did not meet its tanker, it still will get most of its job done, but not all of it.

Mr. HUNTER. I have just one last question. You mentioned we have about 30 percent of our present strategic forces on alert?

General BURKE. Yes.

Mr. HUNTER. Would it cost a lot of dollars to kick that up to 40 or 50 percent?

General BURKE. Thirty percent of the bomber/tanker force, and virtually 100 percent of the missile force. Yes, it does cost a lot of money to do it permanently. You can kick it up to 40, 50, or 100 percent in a relatively short period of time, free, and SAC does that from time to time. They will do it in response to changes in world conditions or just to exercise the capability they do this regularly.

You can do it even 100 percent for periods of time and it costs you nothing; but to do it 365 days a year costs a lot because you have to hire more crews and then you have to fly a commensurate number of hours to train those crews. That means you have to have a larger maintenance force, larger buys of spare parts and POL.

My recollection is that to go from a zero to 30 percent alert rate is virtually free, but to go from 30 to 40, I think, adds something like 20 or 25 percent to the cost of operating the force.

Mr. HUNTER. Thank you.

Thank you, Mr. Chairman.

Mr. STRATTON. Mr. Leath.

Mr. LEATH. I have no questions, Mr. Chairman.

Mr. STRATTON. Mr. Hertel.

Mr. HERTEL. I would like to ask for unanimous consent that I be recorded as voting aye on the motion to go into executive session.

Mr. STRATTON. Without objection, it is so ordered.

Mrs. Byron.

Mrs. BYRON. Thank you, Mr. Chairman.

Let me follow along a bit on some of the discussion that Mrs. Holt was engaged in on the B-1.

Currently there are no tests going on with the aircraft; is that correct?

General BURKE. That is correct.

Mrs. BYRON. Would it not be possible to do any of the future testing on existing aircraft or does the next set of tests have to go in the B-1?

General BURKE. The next set of tests will go on the B-1A. We have taken the No. 4 B-1A, which is the avionics test airplane, and we have taken out the offensive avionics in it. We will be putting in a new set of avionics that will be in the B-1B along with the additional changes to the defensive avionics.

We expect to fly that in July 1984. That will continue to be the avionics test bed. There is really nothing we can learn from flying the airplane as it is today.

Mrs. BYRON. None of those avionics are currently ready to be tested; they are still in the development stage?

General BURKE. They are largely developed; they are essentially the avionics we put in the B-52. It is integration, the software and developing the algorithms.

Mrs. BYRON. We are talking about not getting the first one into the inventory until 1985. It just seems like we could move a little bit faster when we have demonstrated there is a critical need to upgrade our capabilities. I think one of the arguments that we have heard long and hard and will probably be continuing to hear is, should we not wait for Stealth. But the decision of the administration has been made loud and clear that we need to go with the B-1B and therefore I think it behooves us to get moving as quickly as possible.

General BURKE. I certainly agree with that, Mrs. Byron.

We have, compared to other things that have been going on, I think, a fairly fast-paced program of production. The fourth B-1A took 42 months to build and we are on a 36-month schedule for the first B-1B. That is some improvement and, I think, moving in the right direction.

Mrs. BYRON. The decision was made last summer, I guess, and now we are in March, talking about this year's budget, and we are talking about not doing any more testing until 1983. It just seems to me that if we have a critical need we could move things a little bit faster, but I guess I happen to be impatient.

General BURKE. That is a view that is shared by a lot of people, including the Secretary of Defense, to whom I report biweekly and who regularly encourages us to look at that, and we will.

I showed a schedule there. I don't think you were in the room at the time——

Mrs. BYRON. I have seen it.

General BURKE. It shows the contractually binding numbers and we are actually working to dates that are 3 and 6 months in advance of that.

Mrs. BYRON. We seem to agonize over decisions year in and year out; and when a decision is finally made, we agonize over implementation. I guess I am impatient.

Mr. STRATTON. I think Mrs. Byron has raised a good question, General. After all, as we have pointed out, we won World War II in 4 years. You cannot even get a 9-millimeter gun built in less than 5 or 6 years today.

It seems to me that we ought to be able to demonstrate that we have a mobilization capability of the kind that we had in World War II. Maybe this might be a good time to test it out.

What would happen if you went on a three-shift schedule with the B-1? That would increase the cost, presumably. What kind of factor of increase would come about?

General BURKE. It is an interesting and sobering point. Things do take a long time nowadays—too long, and that is partly because most of the pressures that exist in the system are to avoid mistakes rather than to do things quickly.

I think it would be an interesting experiment at least to try to pick some system or systems and see if we could do them more or less along the lines followed during World War II. If we did that,

we would all have to be prepared to accept that there is a certain amount of untidiness in doing things that quickly.

Mr. STRATTON. I know, but it seems to me that we probably ought to be running some tests on quick mobilization. If the balloon, so to speak, goes up, we are not going to say, "Well, we should be able to get this bomber out there in another 8 years or so." We might find ourselves lost.

I think it is something that is worth at least taking a look at, both in terms of whatever cost problems would be involved and how you might go about it. I would take it, in view of what you have said about the R. & D., that it is not a matter of developing new things; it is just a matter of producing them, and if you could do it around the clock it might be a lot faster.

General BURKE. Let me take a look at that, sir. I certainly am attracted to the idea.

Mr. STRATTON. Thank you.

[The following information was received for the record:]

INCREASE PRODUCTION OF B-1

As the program is currently structured, the B-1B will go from contract award to a 15 aircraft Initial Operational Capability [IOC], in approximately 4½ years. The delivery of all 100 B-1B aircraft will occur in about a 3½-year period. This production schedule has been optimized to produce a peak rate of four aircraft per month coincident with the 23d B-1B production aircraft.

It if should be decided to significantly increased the total production and/or the production rate of the B-1B, there are a variety of manufacturing approaches such as increased manpower, expanded facilities, and additional tooling which would have to be considered. Any one of a combination of these approaches could possibly be implemented with positive payoffs.

Based on preliminary data, it is estimated that a restructuring of the current B-1B program to provide for a production rate of six aircraft per month (vice four aircraft per month) would accelerate the delivery of the currently planned 100 B-1B aircraft by approximately nine months. The estimated cost to achieve this increased rate of production is $300 to $400 million fiscal year 1981 dollars) that would have to be invested in fiscal year 1982 and fiscal year 1983. This estimate is based on a combination of increased manpower, additional tooling, and expanded facilities. It does not take into consideration potential problems associated with the availability of needed raw materials and/or manpower.

Mrs. BYRON. If we sat here and waited as long as some other people wait, our elections would come and go and we would still be thinking about whether we would run again.

Mr. STRATTON. Mr. Kramer.

Mr. KRAMER. Thank you, Mr. Chairman.

General Burke, speaking personally, I am quite supportive of the President's program. I have several concerns, one of which I would like to talk to you about briefly, and that is the MX basing decision.

As things stand right now, when will that final decision be made as to the three options that are under research at this point?

Mr. STRATTON. That is going to be coming along a little bit later. The general has not touched on that yet.

Mr. KRAMER. I am sorry. I missed the earlier part.

General BURKE. We are on the bomber leg. The next briefing will be on that subject.

Mr. KRAMER. I apologize. I bombed out on that one. I will not ask you the question at this point, but maybe later on.

Mr. STRATTON. Mr. Mavroules.

Mr. MAVROULES. I just have one question, Mr. Chairman.

General, in the budget with respect to the B-1, is it true that we have about $753 million in there for B-1 research and development at this point?

General BURKE. Yes, sir.

Mr. MAVROULES. Along with that, we have a classified budget item for the advanced bomber?

General BURKE. Yes, sir.

Mr. MAVROULES. In your honest and professional opinion, do you honestly feel we need both bombers, the B-1 and the advanced bomber, taking into account the enormous sums of money that we are going to be expending on both items?

General BURKE. Yes, in my professional opinion, we do.

Mr. MAVROULES. Could you perhaps tell me why you feel that way?

General BURKE. I think we have to start from the proposition that the country needs an aircraft of this genre, a long-range combat aircraft. Such airplanes have served us very well in a variety of ways in the past and will serve us even more so in the future.

Second, the B-52's cannot last forever; they are increasingly less effective and more costly and they need to be replaced, and fairly soon. We could do that with either a B-1 only program, the ATB only program, or a combination thereof.

The cheapest and quickest would be to do the B-1 only. That would deny to the country technology, I think, of enormous promise—technology that will make a great contribution.

To go to the ATB only would add a number of years' delay in fielding a system and would not in the long run be a great deal less expensive. In my own view, I doubt it would be any less expensive than the B-1B/ATB mixture and that is because we have already paid a great deal of the R. & D. costs associated with the B-1B, about $6 billion in current dollars, that have already been invested in it.

So, that is sunk and not recoverable. We now have to pay an additional $2.5 billion to complete the research and development and that is an add that you have to put on the ledger. But the financial advantage is that you now have a program in which you have a competitive position between the B-1 and the ATB that you can sustain for a number of years.

The alternative would commit the country to the sole source of the ATB for the future and experience suggests that is always more expensive than the competitive approach.

Mr. MAVROULES. The point I want to get across is the fact you might have to wait 1 or 2 years for the ATB versus the B-1 bomber. I have heard estimates of 2 years, 18 months, and I have heard estimates of a difference of 5 years between bombers. I don't know whether those figures are absolutely correct, but we are talking about an enormous sum of money.

Let me perhaps ask you this question: Will the ATB have the same capability as the B-1 bomber at this point?

General BURKE. In my judgment it is a good 5 years difference. I think that is the judgment of virtually everyone who has responsibility in the Government with respect to this. Not surprisingly,

people whose companies are involved will take a more optimistic view of the availability. I think it is more like 5 years.

What was the second half of your question?

Mr. MAVROULES. I was talking about the enormous sums of money. Will the performance of the ATB be equal to, better than or less than the B-1B bomber?

General BURKE. It will be different, in that it will rely on different features to assure its mission accomplishment. In terms of range and payload, I think it will prove not to be as capable as the B-1B. I think there will be some inevitable penalties one pays for reduced observability which will show up in reduced range and payload.

Mr. MAVROULES. Therefore, in your professional opinion you feel we do indeed need both bombers?

General BURKE. I do, yes, sir.

Mr. STRATTON. Isn't it true that when you are talking about the B-1 you have something about which you know pretty much what you are doing? The ATB, in all candor, is something that is still a gleam in somebody's eye; it may work and it may not. Isn't that the case, so that we cannot rest the bomber leg of the Triad on something that might turn out to be a lemon?

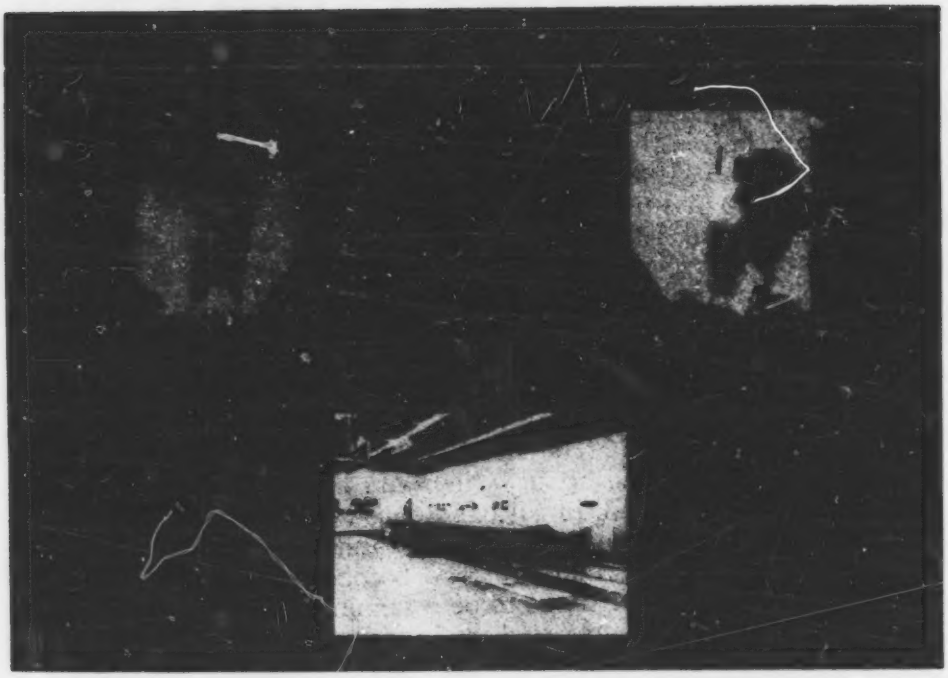
General BURKE. It is very early going into that program. For the long term, some people hold out the prospect we may have some difficulties; others hold out the prospect that there may be counters to it that we are not quite smart enough to think of at this point.

I would be loath at this point to put all of our eggs in that basket.

Mr. STRATTON. Thank you.

Mr. Bennett, do you have any questions?

Mr. BENNETT. I have no questions.

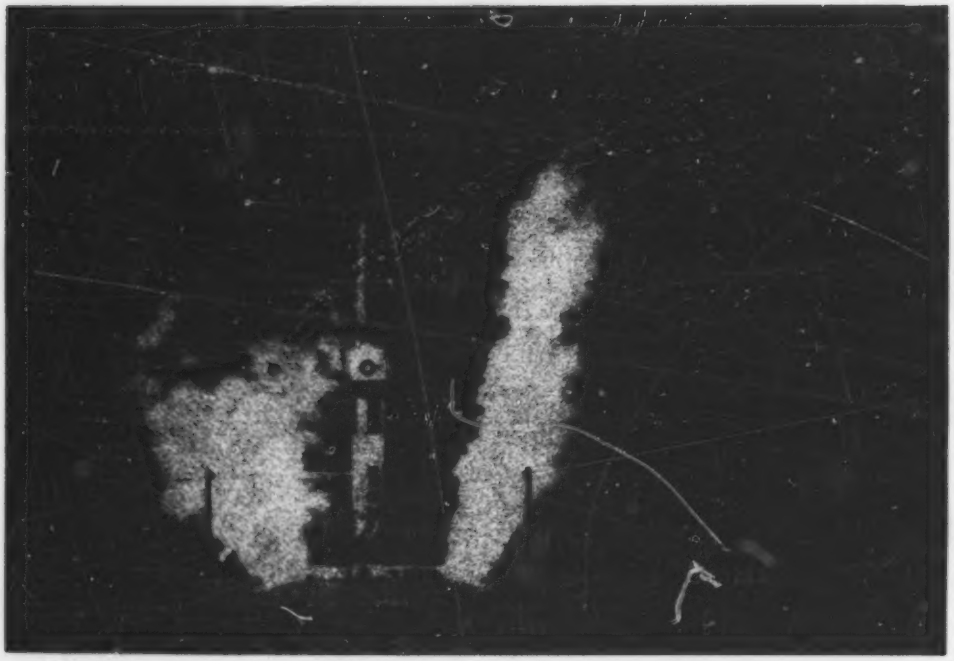


General BURKE. Let me try to quickly go through the other leg of the Triad for which we are responsible and say a few words about the forces we have today, and then move on to the MX.

We have 1,052 intercontinental ballistic missiles in the inventory today, based as shown here. The green bases are Minuteman; the yellow are Titans. We don't have any operational forces at Vandenberg but that is where we do our testing and crew training.

We had a total of 54 Titan II's in the locations shown. It is 52 now as a result of accidents in recent years. We have Minuteman II's at Malmstrom, Ellsworth, and Whiteman Air Force Bases. There are 550 Minuteman III's at Minot, Grand Forks, Warren, and Malmstrom AFB's.

These missiles, as I mentioned earlier, are the most ready of all forces, nearly 100 percent alert at all times and sustainability is not a relevant subject.



The Titans are doing a good job for us still. I think we have made important improvements in safety features. I think the missile is safe and will be supportable for some time to come.

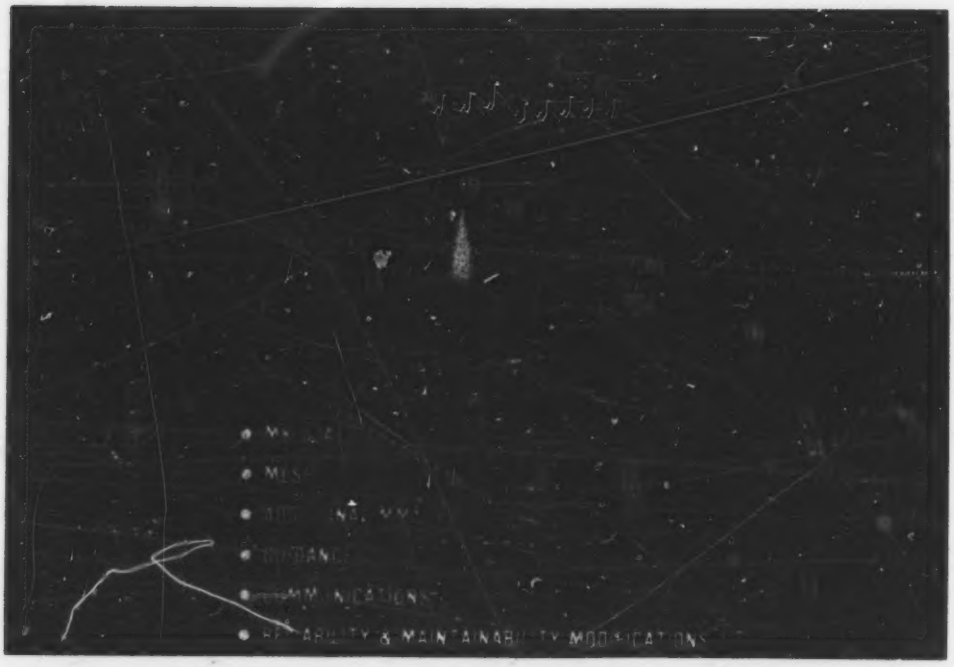
We have decided to begin retiring Titans. That was a budgetary decision to save money so that we could continue the modernization effort. We expect to save about $½ billion between now and 1987 by that action. We are going to start retiring them in October 1982, and retire one wing in the first 2 years and then one missile per month until they are gone in 1987, and by the time the last ones are gone we would hope and expect to have the MX.

Mr. STRATTON. Is Titan a silo killer or a city type of thing?

General BURKE. It is an area type weapon; it lacks sufficient accuracy for use as a silo killer although it is a very large-yield weapon, the largest we have. It has an outdated guidance system and gives us insufficient accuracy to go to hard targets.

The mainstay of our force is Minuteman. All 1,000 of them are performing very well. We have a rigorous operation test and evaluation program in which we fly a sample every month or so to satisfy ourselves that they will do what they are supposed to do if ever called upon.

We are making some important improvements to the Minuteman. In addition, we are completing the warhead and reentry vehicle upgrade for 300 of the Minuteman III's. The Minuteman III's at Grand Forks and Minot are getting the Mark 12A warhead and that will be completed in fiscal 1983.



We have a program for Minuteman survivable emergency power, replacing a portion the old lead acid batteries with new lithium batteries which will provide longer endurance attack, provided they are not hit, for prolonged periods.

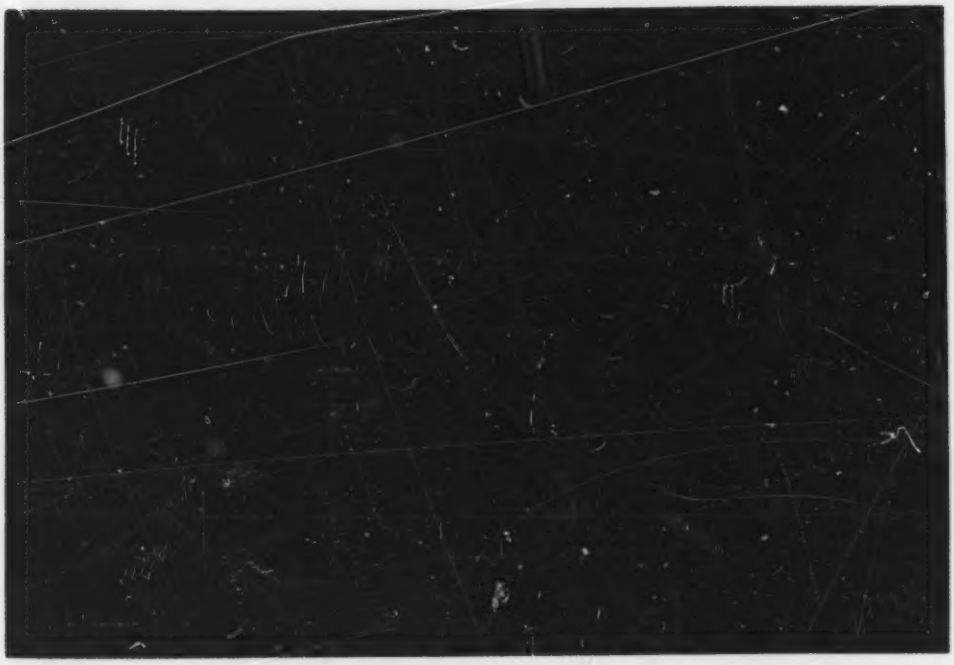
At congressional suggestion, we are going to add 50 Minuteman IIIs to the force, replacing Minuteman IIs. We will do that at Malmstrom AFB, Mont. That will add 100 warheads which will offset numerically at least 52 Titan warheads that we are retiring, although if you were to look at the situation in terms of megatonnage it is less.

These are some fairly minor things we can do in terms of improving the software to get a little better accuracy of Minuteman III: We are also continuing to upgrade the communications so they can talk to the new communications systems as they come along. Finally,we are continuing the necessary reliability and maintainability efforts to keep them healthy and alert.

In your count, Mr. Chairman, $163 million is what that would add up to.

PRESIDENT'S STRATEGIC PROGRAM

Moving from our present force to what we hope to have in the future, the MX missile. This is a subject of some controversy in the country; yet again, it is a step-by-step modernization effort which is part of the total of the President's five-part strategic modernization program.



Looking at the specifics of this part of the President's proposal and the congressional reaction we find that:

In October the President said we would produce 100 operational MX missiles, and Congress supported that.

The President also said that we would deploy up to 50 of these missiles in either Titan or Minuteman silos reconstructed for increased hardness, and Congress went along with the general proposition, but questioned the superhardening. Since then, the administration has modified its plans and now plans to put MX in silos with minimum modifications. This is the near-term effort.

For the longer term we will do research and development, looking at long-term survivable basing, looking at three alternatives—deep basing, continuous patrol aircraft, and ballistic missile defense.

The President's proposal was to come back with a decision in 1984: Congress said that is too long, and directed us to prepare a basing mode by the summer of 1983. We are complying with that direction and have formulated our schedule accordingly.

In regard to the deep basing, Congress supported that. However, Congress in the authorization conference raised questions and had strong reservations about the air mobile concepts and directed that we not spend any money for that purpose. We are complying with that direction at this time, although there are discussions underway at this time between the Office of the Secretary of Defense and the committee staff.

Finally, ballistic missile defense—Congress supported that, added money for that purpose but said we were to spend at least $25 million looking at deceptive basing of MX in association with ballistic missile defense because of the advantage obtained from preferentially defending deceptively based offensive missiles.

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OVERVIEW

Starting with that Presidential and congressional guidance, we developed the near-term and a long-term plan. I will say a few words about each.

NEAR-TERM PLAN

For the near term, the missile development is proceeding apace and quite well. You are familiar with the general description of it—a big missile compared to Minuteman, but it still meets the arms control definition of a light missile. It was sized not to exceed the throw weight of the SS–19. It is twice as accurate as the Minuteman.

The change from last year is that we now propose to carry the advanced ballistic reentry vehicle, ABRV, rather than the Mark 12A. MX will be able to carry 10 ABRV's to the required range. We are working to a first flight in 1983. We had over 20 test firings of each of the various stages, stages 1, 2, and 3 are a solid rocket system. Stage 4, the postboost vehicle is a liquid system.

We have built a canister and successfully ejected a full size mock-up missile. We have demonstrated removal of the shroud and simulated dispensing of the reentry vehicles by postboost vehicle test firings.

The guidance development seems to be in hand. In short, this is a very successful development program. We are meeting all technical objectives. The program is on schedule and on cost. I don't think we will see any big surprises. We expect to demonstrate that on the first flight in less than a year.

SILO BASING

Looking at the basing, again the near term, the interim silo solution, the President said we would base MX in either Titan or Minuteman silos. We studied the options. It seems to us to be a clear call. Minuteman basing is operationally more effective than Titan and is more compatible with ballistic missile defense if that were added at some point in the future. Minuteman silos are also located closer to the targets we might have to reach. Based on these and other reasons, we recommended we drop the Titan from further consideration. Secretary Weinberger has agreed with that.

We now are narrowing to choose among the 1,000 Minuteman silos. We expect to make a recommendation to the Secretary of Defense in the near future.

Mr. STRATTON. This is for 40?

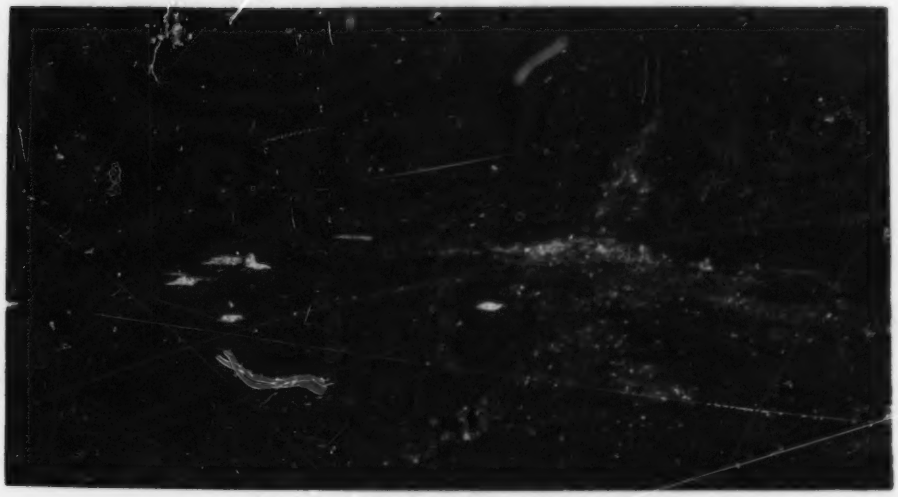
General BURKE. At least 40.

Mr. STRATTON. Why would we put them all at one base? Why not scatter them around?

General BURKE. It could cost a fair bit more to scatter them. I don't think it would accomplish anything. Obviously, the Russians would know which ones you modified and they would just change their targeting plans accordingly. The concept of doing this looks something like this.

The missile is of such size that once assembled it can't be moved on public roadways; it is 192,000 pounds, so it has to be assembled onsite. It will be brought in by transporter in stages. The first stage alone weighs 110,000 pounds. Since an MX transporter loaded with the first stage will result in a load of 200,000 pounds, which compares to 125,000 pounds from the Minuteman III booster and its transporter, we will probably have to do some shoring up of bridges.

MX stages are brought in and the missile is assembled in its canister in that silo. This depicts the way that is done. There will be an air elevator, if you will, inside the canister that lowers each stage as it is added. You put in the first stage, connect it up, the air elevator lowers it down to the requisite level and then you put on the second stage, and lower it, et cetera, until the missile is assembled and ready to go.



This is an existing Minuteman field. Notice that farming takes place up to the fence. There are 2½ acres behind the fence, and that won't change at all. All the work that will take place for MX basing will take place here on the site behind the fence. In fact, when it is finished it would not be apparent to the eye that any change had taken place.

What we intend to do is the minimum modification. This is the Minuteman III inside its silo and this is the support building. To

deploy MX you take out the Minuteman missile and its shock isolation system and you replace that with a new shock isolation system, a canister, and MX is then emplaced in that canister. We expect that when we finish we will have a hardness to nuclear effects about equal to what we have now with Minuteman.

What does all this cost? We are frequently asked to express the cost in terms of what the missile costs and what the basing costs are. It is rather complicated. I tried to do it with this chart.

First, the program is to buy 100 operational missiles. Right off, you see that takes 226 missiles. One major reason for that is we must test fire missiles over the operational life of the system to maintain confidence in their reliability. This initial buy will provide test assets for about a 20-year operational life.

We are still routinely test firing Minuteman II's. That is the only way you can be sure that they are working. About 110 of the missiles beyond the 100 deployed will be used for flight test over the years. The rest are for aging and surveillance, ground testing, and spares.

Research and development—nearly $8 billion total; 1983 represents the peak year R. & D. and that will start to decline in 1984.

Procurement of the missile—a little more than $7 billion—begins this year, this being the first missile procurement.

Construction funds are for Vandenberg. Most of this is done. We are talking in constant 1982 dollars, $15 billion, of which less than $4 billion has been spent. There is about $11 billion to go to complete development and build 226 missiles.

Turning to the basing, it is a little more complex. First, the total bill that we are looking at to do this silo basing job is $3.6 billion. We have already spent about $700 million for the MPS system and not all of that is usable; some of it is, but I don't know any way to break it out, so I just pulled it out. However, it would be fair to point out that about $1 billion of the basing costs are for things that you would have to spend regardless of how you make the missile.

If you had an air mobile system only, or deep basing, you would still have to have your depot facilities and still have to buy canisters, et cetera, so perhaps you could identify this $2.6 billion as related solely to putting MX in the 40 silos. If you divide that by 40, you get a unit cost of $65 million, which is a lot of money.

Again, there are pretty heavy start-up costs associated with that. If you were to build a 41st silo it would be more like $15 million.

Mr. STRATTON. When will the silos be ready?

General BURKE. We plan to start the modification in early 1985 and we will have the first operational flight of 10 MX's in 1986. We will complete the 40 in 1987.

Mr. STRATTON. Then we won't be able to fire one until 1987?

General BURKE. We are going to fire the first research and development test missile in less than a year.

Mr. STRATTON. I mean in anger.

General BURKE. In anger, right, in 1986 we will be in a condition to fire in anger.

Mr. STRATTON. We will have to keep them mad for a long time.

MX LONG-TERM OPTIONS

General BURKE. Long-term survivable basing modes— the three I mentioned, and I will say a word about each. We talked a little about this in the full committee session.

Air mobile patrol—We have looked at air mobile systems over the years and have found them wanting. The new feature that is being looked at is the technologies that are available which led some people to believe that you can now build an airplane that is very fuel efficient and can stay aloft for days rather than hours. In such a case you might be able to manage operating these airplanes continuously as opposed to the ground-alert systems that we have looked at in the past, and thereby they would acquire survivability features similar to the SLBM.

A lot of people question whether the technology is available to do that. Obviously, that needs a careful look before we proceed down that path.

Mr. STRATTON. General, who paid for that slide?

General BURKE. I am not sure. It does probably predate our congressional direction.

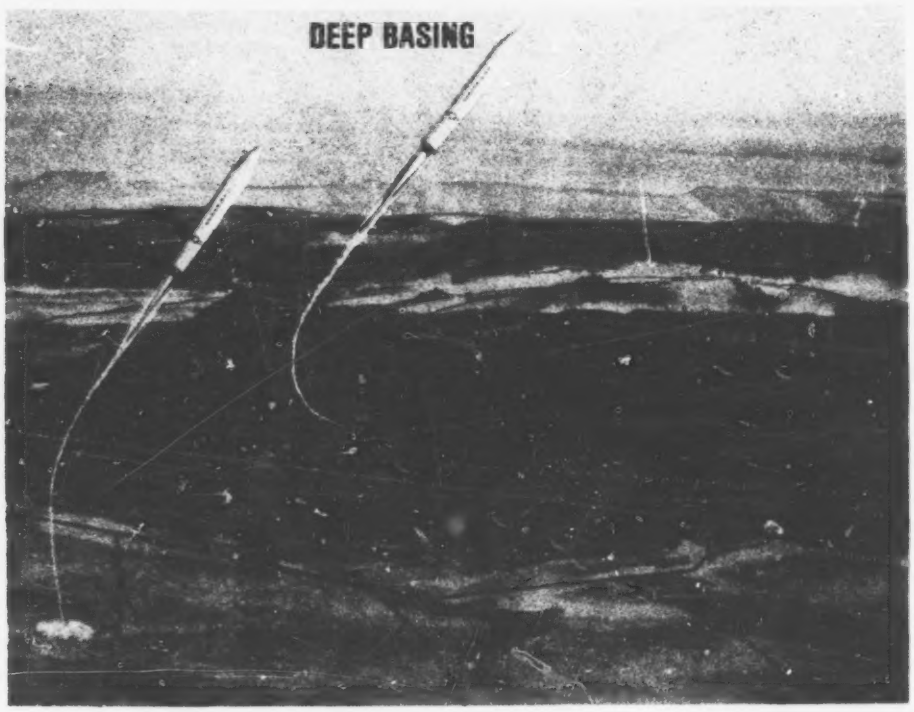
Mr. STRATTON. You have a directive not to spend any money——

General BURKE. I think the slide goes back to a Scientific Advisory Board study that we did on this subject before we had that direction. When the Townes panel discovered this, I asked the Air Force Scientific Advisory Board to look at it in a little more depth. I think that slide goes back previous to that, around September of last year.

Mr. STRATTON. There were some indications in the information we got before the full committee that you were going ahead and looking into that whole thing.

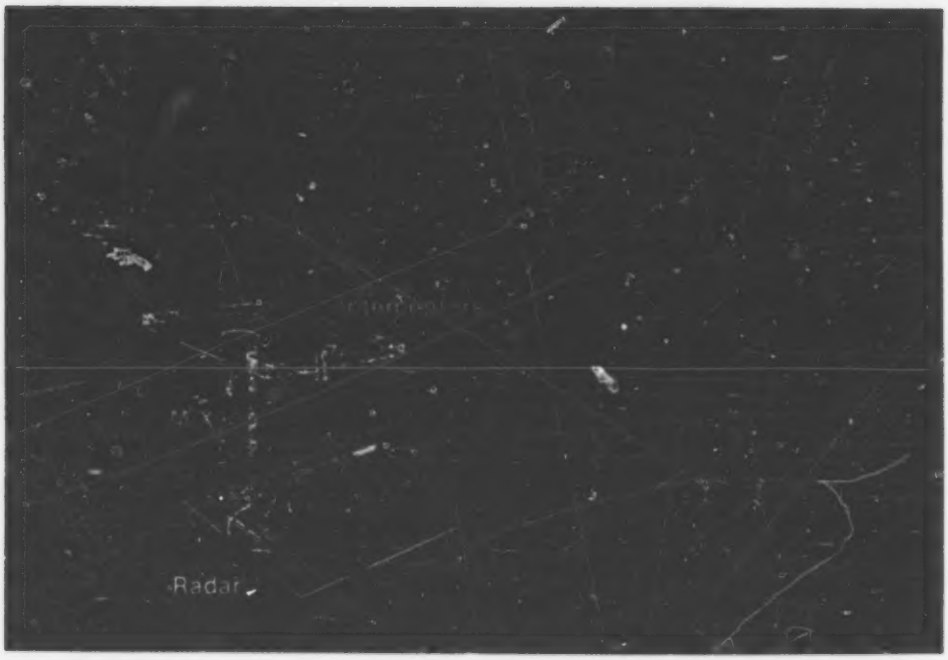
General BURKE. No, sir. What Dr. DeLauer has proposed to this committee, and the others, is that the key issue in his mind and many others is would such an airplane be survivable? If it is not survivable, there is no point in pursuing it. He has suggested that it would be worthwhile for the Department of Defense, in-house, with its own people, including the Defense Science Board, to look at the survivability questions, and if that is encouraging, then come back to the Congress and ask for the release of money to continue a study.

I don't think there has been a congressional response to that yet. At this point I don't know of any efforts or money that are being spent on it.



Deep underground basing, again, is a notion that has been looked at and rejected over the years. There are some new technologies here that change the basic concept. In the past we tended to look at systems in which you could have predug exit holes which are identifiable and hence targetable.

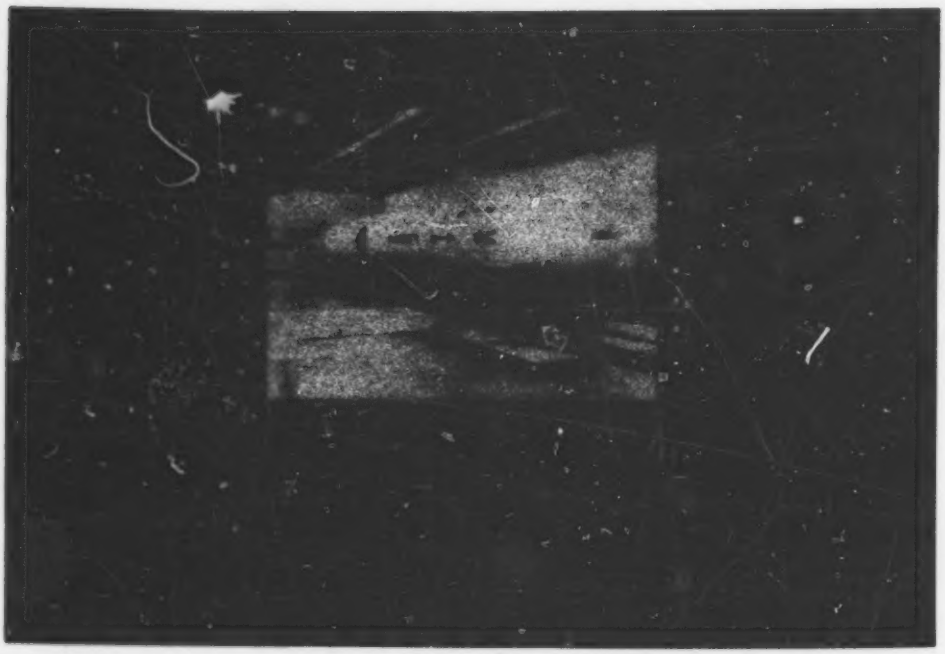
Now there are mining equipments out that led people to believe that you can actually attach a boring device to the canisterized missile and it could dig out any path that was selected after an attack. Obviously, this is not a quick-response system; it would be part of the strategic reserve force.



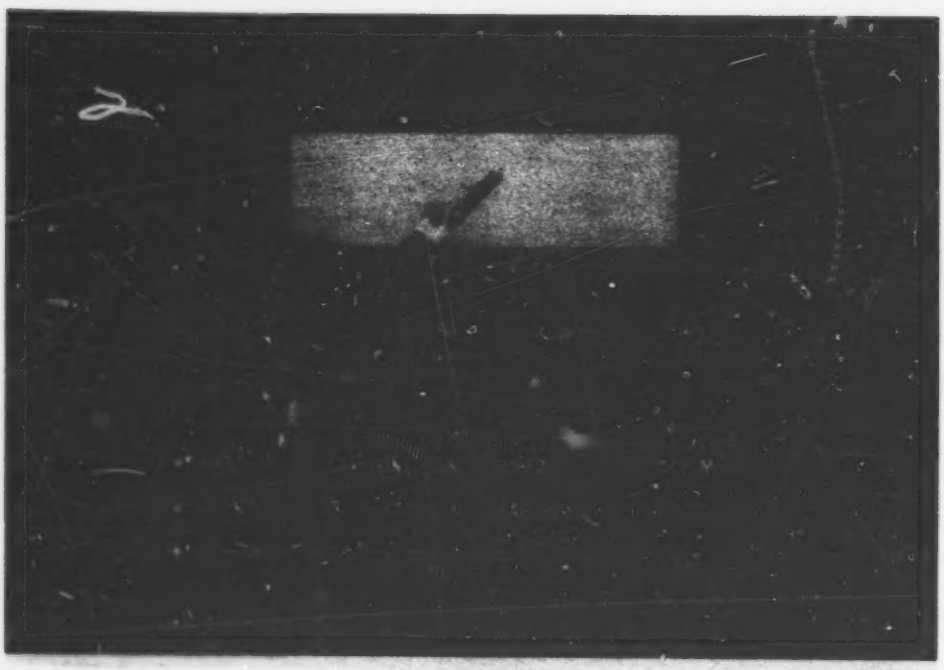
The third area and the one that is getting the most attention and the most money is ballistic missile defense, which is basically within the purview of the Army. They are hard at that. We are working with them to make sure that our efforts are integrated, but in particular in accordance with the congressional directive we have a program looking at the question of combining the deceptive basing with ballistic missile defense. I think that is, as I believe the Congress also views it, one of the most promising prospects.

Those are the three alternatives we are looking at.

The schedule toward which we are working, again with congressional direction, is divided into two phases. Between now and August we will do a preliminary assessment to try to pick the best system within each of these three, and then do a detailed evaluation of each of the selected systems in time to make a recommendation to the Secretary of Defense in May of 1983. The Secretary owes you a report in July of 1983.

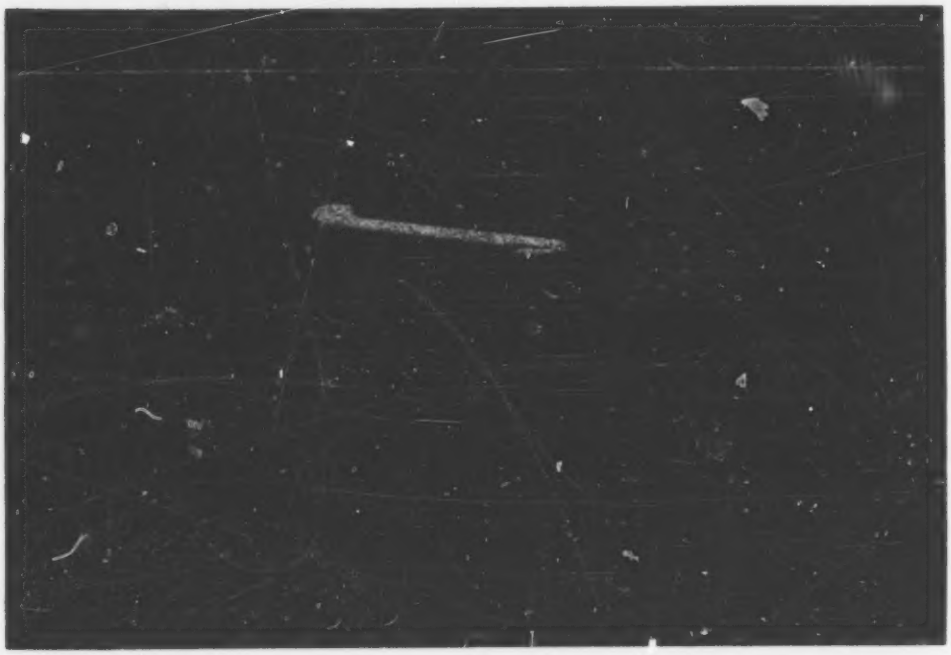


If we look at the specifics of the 1983 request, again a large procurement buy, but only nine missiles, over $900 million of that is nonrecurring; it is startup cost and divided as shown between missile, basing equipment and things like the canister and support equipment that go with the depots.



Finally, a little bit on TNF, or INF, as you choose. The system that we have in that category is the ground-launched cruise missile. It is, of course, a derivative of our other cruise missile family, specifically the sea-launched cruise missile built by General Dynamics. It has the same engine and the same guidance as we have in our air-launched cruise missile. We expect an IOC in late 1983.

We are moving forward on that. There are some technical difficulties. It is a pretty fast-paced program. Nevertheless, we are on track and hope to stay there.



We started production last year. This year we propose to move the rate of production, which is 120 a year, to buy out the total of 560, of which 464 would be operational and $519 million is shown here.

Mr. STRATTON. That is a mobile missile?

General BURKE. Yes, sir. The concept would be that in peacetime and under normal conditions it would be stored in hardened shelters in Europe, shelters that would be designed to be impervious against conventional attack, not nuclear attack. Then during periods of heightened tension or increased defense conditions they would move out down the highways to preselected points and thereby provide for their survivability. They travel on transporter-erector-launchers.

Mr. STRATTON. Would it be feasible to put the MX in a mobile mode?

General BURKE. If one wished to go with a mobilized ICBM, you may want it a lot smaller than the MX.

Mr. STRATTON. Any questions?

Mr. BENNETT. Is there any serious thought being given to road mobile or rail mobile using ordinary railroads with a smaller weapon?

General BURKE. There is no organized effort in that direction. I have been thinking about it a little since we talked the other day, trying to decide in my mind if there is any easing of the national mood that would make that more possible than we have thought in the past; but the Department is not doing anything formally right now.

Mr. BENNETT. I am glad you are thinking about it, because I believe the national mood would allow it if proper parameters would be set up. I don't believe they would want to have such a missile moving around in ordinary traffic, but there is a large portion of the day which is not heavily trafficked and you could restrict it to that period, and I think the public would go along with that.

I have no further questions. I would encourage you to pursue it, because it seems to me that offers more hope.

Mrs. BYRON. General, you quoted last year's dollars on this, you quoted your figures using last year's dollars?

General BURKE. On the MX?

Mrs. BYRON. Yes.

General BURKE. Yes.

Mrs. BYRON. We are talking about 1984-85 dollars?

General BURKE. On one chart, the one where we have the total cost of the program, I showed that in 1982 dollars. Then in the traditional form, when I showed the actual 1983 request and beyond, that is in 1983 and then-year dollars.

Mrs. BYRON. We are talking about final escalated dollars, aren't we?

General BURKE. Yes. The official submission is all in escalated then-year dollars.

Mrs. BYRON. Thank you.

WRITTEN STATEMENT OF LT. GEN. KELLY H. BURKE

Mr. Chairman and Members of the Committee:

I am pleased to present the Air Force Aircraft and Missile Procurement and the Research, Development, Test, and Evaluation (RDT&E) budget request for Fiscal Year 1983. The programs included in the budget were selected after careful review of our overall defense needs and represent the minimum Air Force capability required to support our most basic national security goals.

Today, the greatest danger we face is clearly the Soviet Union. While there are certainly other threats to American interests, only the Soviets have the capability to directly threaten our survival as a nation. They have amassed this capability through an unprecedented arms buildup which shows no signs of slackening. Because of the limited appeal of their ideology, political structure, and economic system, the Soviets have repeatedly resorted to the threat or actual use of military force to achieve political objectives. The coercion of Poland and invasion of Afghanistan are graphic examples. To the extent they believe themselves militarily superior, the Soviets are more likely to continue to pursue other adventures that otherwise might be considered too risky.

The military capability of a nation or an alliance is largely a function of the resources it spends to achieve that capability. Since 1971, cumulative Soviet military investment (procurement, RDT&E, and military construction) has outpaced U.S. investment by $440 billion (1983 dollars). During the same period, Warsaw Pact military investment exceeded that of the Atlantic Alliance plus Japan by over $100 billion.

This difference in expenditures between the Warsaw Pact and the Atlantic Alliance is magnified by the marked incongruities in political and economic alignments that exist within the two groups of nations. As an example, the Soviets, through their system of design bureaus, provide the bulk of the military designs and equipments to other Warsaw Pact countries. This results in a significant increase in the effectiveness of their investment for military hardware. On the other hand, the investment effectiveness of the Atlantic Alliance and Japan is reduced because of differences in their industrial base and standards, multiple designs, and concomitant smaller production runs.

Although comparisons of military expenditures are useful for illustrating relative trends, it is Soviet hardware and capabilities that form the substantive basis of our concern. The Soviets have and are continuing to outproduce us in almost every category of military equipment. In addition to growing numerical superiority, the Soviets are fielding systems of increasing quality and sophistication. In Soviet airpower, we are seeing fighter aircraft with increased payload and range and with improved avionics, armaments, and electronic countermeasures. These advances not only enhance their offensive capability, but also are eroding the qualitative superiority we have traditionally relied upon to offset the quantitative imbalance.

In sum, the sustained Soviet military buildup has resulted in a major shift of the military balance in the direction of the Soviet Union. Continued Soviet military growth, if left unchecked, will inexorably result in unambiguous Soviet military superiority which, in turn, will create conditions conducive to increasingly overt Soviet moves against our interests around the globe. We cannot afford a perception on the part of the Soviet Union, our allies, or other nations that the United States is neither able nor willing to meet the Soviet challenge.

Our success in meeting this challenge will, to a great extent, depend upon our maintaining a continuing commitment to stronger

defense. The Air Force's RDT&E and procurement programs are vital elements within the overall defense program. Through these programs, we will develop and procure the systems needed to redress the imbalance and reverse the erosion of our technological lead. Our Fiscal Year 1983 request is a strong step toward meeting the Soviet challenge.

Additionally, we need improved production efficiency and a strong industrial base to support our defense requirements. To control costs and make effective use of available resources, we are emphasizing programs to upgrade the efficiency of industrial facilities and, at the same time, undertaking important new initiatives to strengthen the management of our programs. We must also continue effective armament cooperation with NATO and other allies to collectively maximize the return on our investment for defense.

This budget continues to reflect emphasis on aircraft spares and repair parts to improve our operational readiness and sustainability. However, this has been balanced with continued production of aircraft and other systems. In addition, this budget supports a strong RDT&E program which will enable us to counter future threats and to correct military deficiencies. In developing the budget, to be consistent with our national security objectives, we have taken care to provide an appropriate balance between near-term and long-term requirements.

In presenting the Fiscal Year 1983 request, my discussion centers on major mission areas, readiness and sustainability, and management initiatives. For each mission area, I will briefly describe the current and projected threat, our deficiencies in meeting that threat and then highlight the key programs to improve our capabilities. Intelligence and classified programs are not addressed, but will be reviewed in separate closed hearings.

The end of this statement contains tables of the Fiscal Year 1983 Procurement Program (P-1 document) and a complete list of RDT&E programs by mission area. Also included is a glossary of acronyms and abbreviations. Detailed information on the individual programs has been provided to Congress and is found in the Congressional Data Sheets, the Justification of Estimates for Procurement Programs, and the Descriptive Summaries for RDT&E programs.

II. STRATEGIC

Strategic force modernization is one of the highest priority efforts contained in the budget request. This emphasis is dictated by the need to end the relative decline in our strategic capabilities and to restore a margin of safety in the U.S.-Soviet strategic balance.

The fundamental objective of our strategic nuclear forces is to deter nuclear attack or the threat of such attack on the United States, our allies or others whose security is vital to our national interests. This objective is supported by the strategic Triad concept: a highly credible, capable, and well-hedged force structure that is designed to deter and, if necessary, respond to a wide range of threats. The Triad consists of submarine-launched ballistic missiles (SLBMs), land-based intercontinental ballistic missiles (ICBMs), and the bomber leg which includes cruise missiles and supporting tankers. These forces must be capable of surviving a first strike with a credible counterstrike capability of such magnitude as to deny the Soviets any possibility of a favorable strategic outcome.

The Triad concept has two major benefits. First, it provides confidence that, while the Soviets may be able to develop the capability to destroy or neutralize one leg of the Triad, they would find the task of simultaneously neutralizing the remaining

legs beyond their capabilities. Second, it forces the Soviets to spread their defensive efforts to counter a wider range of threats, thus denying them the advantage of concentrating their resources in any single defense area and/or diverting funds to areas more threatening to us. The Triad has served us well in the past and will continue to serve us well in the future if we act promptly and prudently to redress the emerging vulnerabilities and deficiencies in our strategic forces.

At the end of World War II, the United States had a monopoly in nuclear weapons. This posture allowed us to rely on our strategic force superiority to help maintain stability in the world. Today, however, the Soviets have fielded powerful strategic forces which have caused a shift in the strategic balance. Any imbalance in strategic forces provides an added incentive for Soviet adventurism and makes meaningful and equitable arms reduction agreements difficult to achieve. Unless the Soviet momentum is checked, we face the ominous prospect of substantial Soviet superiority in the years ahead.

This shift in the balance of strategic power has resulted from a determined and sustained commitment to strategic force modernization by Soviet leaders. A significant disparity has existed for years between U.S. and Soviet spending for strategic forces. Since 1971, the estimated cumulative dollar costs of Soviet strategic force procurement exceeded that of the U.S. by about $130 billion (1983 dollars). Our major challenge is to modernize our strategic forces to maintain their deterrent value in the face of this substantial Soviet buildup. In short, we must proceed quickly and resolutely with a vigorous strategic modernization program.

Last October, President Reagan announced a broad and coherent plan for revitalizing our strategic forces. Over the next several years, the President's program will strengthen our current strategic posture, and provide deterrence that is far more secure and stable. Furthermore, the program will increase the incentive for the Soviets to negotiate genuine arms reductions.

The President's program consists of five mutually reinforcing elements: (1) improvements in command, control, and communications (C^3) systems; (2) modernization of strategic bombers; (3) deployment of new submarines and submarine-launched missiles; (4) a step-by-step plan to improve the strength and accuracy of new land-based missiles and to reduce their vulnerability; and (5) improvements in strategic defense. The Air Force is responsible for carrying out much of the President's strategic program. The balance of this chapter describes the key Air Force strategic offense and strategic defense programs. Strategic C^3 systems are discussed in Chapter V.

STRATEGIC OFFENSE

Strategic Offense encompasses the two legs of the strategic Triad for which the Air Force is responsible--land-based ICBMs and the bomber leg.

Land-Based ICBMs

Among the most critical and growing challenges facing us today is improving the capability and survivability of our land-based ICBM forces. The Soviets now have the capability to destroy a large and growing percentage of our land-based ICBMs and still maintain a large residual force of weapons.

The M-X missile is being developed to improve ICBM capability through a phased modernization plan. The plan provides for survivability and endurance of the M-X over the long term, while taking advantage of the M-X's unique capability and flexibility in the near term. Survivability and endurance will be pursued through vigorous research and development on three different

98-273 O - 82 - 5

basing options: (1) Continuous Patrol Aircraft--a survivable, long-endurance aircraft platform for M-X; (2) Deep Basing--deployment of M-X in survivable locations deep underground; and (3) Ballistic Missile Defense (BMD)--active defense of land-based M-X missiles. Within the BMD option, we will work with the Army to explore the synergism which can be achieved through various combinations of active defense, silo hardening, and deceptive basing.

The Air Force is responsible for the first two options, while the Army, in cooperation with the Air Force, is responsible for BMD. These development efforts are structured to permit selection of one or more of these options by July 1983, as directed by Congress.

To provide improved capability in the near term, we will deploy a minimum of 40 M-X missiles in Minuteman silos. Minuteman silos were selected for four primary reasons: (1) greater operational effectiveness, (2) deployment in one wing, which enhances C^3 capabilities, avoids duplication of facilities, and reduces costs, (3) compatibility with BMD deployment, and (4) flexibility for future expansion. Criteria for silo selection includes geological conditions which provide maximum inherent hardness against nuclear effects and preserves the option for further hardening, should that be a feature of the long-term basing mode.

Deploying M-X in silos is a reasonable and prudent approach for improving the deterrent capability of our ICBM force. Since M-X will be ready for deployment in 1986, placing M-X in existing silos is the fastest way to improve our capability. M-X in silos will also serve as a near-term counterbalance to the growth in Soviet hard-target, counterforce capabilities. Furthermore, the decision to produce and deploy M-X in silos will greatly enhance the U.S. position for favorable strategic arms reduction talks.

In FY 1983, we will continue development of M-X, vigorously pursue the long-term basing options and procure the first nine missiles. These efforts support our objective of deploying M-X in silos beginning in 1986.

Although M-X commands our primary attention, important programs are also underway to improve the effectiveness and endurance of our Minuteman force. We plan to replace 50 Minuteman IIs with Minuteman IIIs at Malmstrom AFB, Montana. This will provide 100 additional Minuteman warheads. In the ICBM C^3 program, we are integrating three improved communications systems into the Minuteman launch control centers to increase reliability of emergency message reception and enhance connectivity with higher authority and other strategic forces. We are also revising the guidance software to improve Minuteman III accuracy.

Modification programs for the Minuteman force include the Minuteman Extended Survivable Power (MESP) program to provide lithium batteries for 200 Minuteman III silos. These batteries will extend Minuteman on-alert time for a prolonged period by augmenting existing commercial and standby diesel power sources. Other modification projects support reliability and maintainability upgrades.

Titan II, our oldest deployed ICBM, has already exceeded its planned operational life and is becoming more costly and difficult to operate and maintain. As part of the President's strategic modernization program, Titan IIs will be incrementally deactivated between FY 1983 and FY 1987. The planned retirement schedule permits a prudent drawdown pace consistent with safety and logistical constraints, while at the same time satisfying operational alert requirements. Requested funds are for necessary modifications to maintain the safety and effectiveness of the Titan II system throughout the planned deactivation period.

The Advanced Strategic Missile Systems program provides long-term options for improving ballistic missile forces by supporting the early development stages for critical elements of advanced reentry systems, missile guidance, support equipment, and basing. Our current emphasis is on developing M-X defense penetration systems which will also be adaptable to Minuteman III.

The Bomber Leg

Historically, the unique military characteristics of the manned bomber have provided a vital dimension of flexibility to our strategic and tactical forces. Bombers are the only element of the Triad that can be launched prior to a decision to employ these weapons. During a crisis, manned bombers can be launched to ensure their survivability or to signal national resolve. As the situation requires, bomber crews can then be redirected or recalled with confidence. Moreover, bombers provide the capability to conduct damage assessment strikes against fixed targets and to engage unanticipated or imprecisely located targets. In addition, through the use of human judgment and on-board sensors, crews can determine target location and status at the time of strike.

The manned bomber is also able to complement our tactical forces by providing the flexibility for nonnuclear force projection in response to unforeseen contingencies worldwide. In addition, bombers are able to provide maritime support to U.S. naval forces through long-range sea surveillance, ship attack, and mine-laying. As reusable strategic weapon systems, long-range combat aircraft can accurately deliver large nuclear or conventional payloads throughout the entire spectrum of conflict.

In light of the rapid advances in the Soviet military arsenal and Soviet and Soviet-backed adventurism around the world, the need to modernize our strategic bomber force is clear and compelling. The B-52s have been the mainstay of our manned bomber forces for the past 25 years, but their ability to continue to serve effectively in the penetration mission is diminishing. They are becoming more difficult and expensive to maintain and, more importantly, will become increasingly vulnerable to a Soviet first strike and to Soviet air defenses over the next several years. Because B-52s are not fully hardened against the effects of nuclear blasts and are relatively slow in flying out from their bases, they are more vulnerable to attacks from SLBMs launched from Soviet submarines patrolling off our coasts. Moreover, because of their large radar reflectivity and relatively slow speed at low altitude, the B-52s will be far less able to penetrate Soviet air defenses during the latter part of this decade.

The limitations inherent in the B-52 make it imperative that we start fielding a replacement aircraft now. We have begun a time-phased bomber modernization program designed to use the remaining capabilities of the B-52, while laying the groundwork for our future bomber force. The plan calls for the major portion of the B-52G/H force to undergo modification for cruise missile carriage. Additionally, we will produce 100 B-1Bs which will have an initial operational capability (IOC) in 1986. The final segment of the plan is to develop and produce an Advanced Technology Bomber (ATB) with an estimated IOC in the early 1990s.

Acquiring the B-1B while continuing to pursue the ATB is the most prudent approach for revitalizing our bomber forces. This approach enables us to field the necessary additional forces required during a period when the United States must depend heavily on bombers, while we take the proper steps to strengthen our land-based missiles. It will also provide time for an orderly and logical development pace of the ATB to capitalize on this important technology and avoid the costly major

redesigns likely in a too rapidly paced program. In addition, a combined force of B-1Bs, ATBs, and cruise missiles will place maximum stress on Soviet air defenses and provide the United States with significant leverage in our long-term strategic competition with the Soviets.

The B-1B is about 80 percent common with the original B-1 in terms of basic airframe and engine design. It will incorporate state-of-the-art improvements that will make it highly survivable against existing and projected threats. For example, the B-1B will embody a combination of techniques to reduce its radar cross section to a level one-tenth that of the original B-1 and one-hundredth that of the B-52. It will also include the latest developments in electronic countermeasures technology and offensive avionics systems. These developments, in conjunction with its high speed and low level capabilities, will provide high confidence that the B-1B will be able to penetrate Soviet air defenses well into the 1990s and perform as an effective cruise missile carrier and conventional carrier well into the next century.

We are confident that we can field the B-1B on time and within the projected cost of $20.5 billion (expressed in FY 1981 constant dollars or $29.5 billion, expressed in then year dollars), provided that the funds required are made available in accordance with our schedule. This confidence stems from the fact that the major part of the engineering is complete, the design is mature and tested, and the B-1 has already undergone almost 2,000 hours of highly successful flight testing. The current program incorporates no new technology development. Our primary focus is on the integration of proven technology and state-of-the-art systems. In addition, critical long-lead items necessary for production, such as forgings, tooling, and materials, have been retained from the original B-1 program and are available. Finally, we have in place a highly skilled and experienced team of Air Force and contractor personnel to manage the program.

The FY 1983 B-1B RDT&E program continues necessary development and test activities, including work deferred from the original B-1A program, cost/producibility redesigns, development of multi-role capabilities, and flight tests. The B-1B procurement request provides for the purchase of seven aircraft, initial spares, and procurement for follow-on aircraft.

As for the ATB, we have selected the prime contractor as well as other key members of the development team. We are proceeding with this program at the fastest possible pace. While most details of this program are classified, the essential point is that the ATB is being developed using low observable techniques to negate the effectiveness of present and projected air defenses. The technologies involved are exciting and promising, but because of the major advances required in several areas and the consequent uncertainties involved, there would be a high degree of program risk in concentrating solely on ATB. For these reasons and others, a significiant acceleration of this important program is not prudent at this time. However, we are confident that an orderly development program will enable us to resolve these uncertainties and will result in an ATB that represents a technological advance of extraordinary military significance. When deployed in the 1990s, it will augment the B-1B capability and contribute dramatically to the strength and deterrent value of our strategic forces well into the next century.

Until the B-1B is available, the B-52 will remain the mainstay of the bomber leg. As these aircraft transition to the cruise missile carriage role, we expect them to remain effective well into the 1990s. These continuing capabilities will require modifications and updates to counter the expected threat, maintain aircraft effectiveness and reliability, and keep the aircraft supportable. RDT&E activities include avionics updates to B-52G/Hs for Air Launched Cruise Missile (ALCM) compatibility;

updates to selected critical subsystems, including the radar, to correct reliability and supportability problems; and tests and development to provide essential electronic countermeasures and nuclear hardness upgrades.

Our B-52 procurement efforts have been largely devoted to obtaining offensive avionics system modification kits for the B-52G/H and modification kits for a cruise missile carriage capability for the B-52G. In FY 1983, we will also begin procurement of cruise missile carriage modification kits for the B-52H.

Our efforts to keep the B-52, FB-111, ALCM, and tactical aircraft current with the increasingly lethal and sophisticated Soviet air defenses, center on the very important Protective Systems program. This program develops and tests improved electronic, infrared and elecro-optical countermeasures, as well as lethal protective systems.

We are continuing development and procurement of ALCM, the only major near-term initiative we have to counter the growing expansion of Soviet military capabilities. The ALCM enhances our bomber's capabilities by providing greater weapons accuracy, increased flexibility for bomber routing and targeting, reduced bomber exposure to defenses, and defense saturation. Our RDT&E activities include development of depot support equipment, electronic countermeasures to increase survivability, and upgrades to enhance ALCM's effectiveness. The FY 1983 procurement funds are for the purchase of 440 additional missiles.

The near-term deployment concept is to carry a mix of ALCMs, SRAMs, and gravity bombs on those B-52s modified for cruise missile carriage. This will prevent the Soviets from optimizing their defense against the bomber or the cruise missile, and will provide maximum deliverable megatonnage and weapons during the period the B-52 transitions to a stand-off, cruise missile carrier role.

In reviewing the internal weapons carriage on current and planned bomber forces, we recognized an opportunity to consolidate several rotary launcher development efforts into one Common Strategic Rotary Launcher (CSRL). Currently, there are separate launcher designs for the B-52, B-1B, and ATB for the carriage of nuclear bombs, SRAM, and ALCM. The opportunity exists for the development of a single launcher to accommodate these weapons. Further, it is desirable for all new rotary launchers to be compatible with future conventional weapons--for example the Medium Range Air-to-Surface Missile (MRASM) and the Conventional Standoff Weapon (CSW). To avoid proliferation and to reap the cost, operational, and support benefits associated with a common design, we are proceeding with initial activities that we anticipate will lead to the development of a CSRL. The CSRL is intended for employment on all three bombers.

Tanker aircraft are a vital part our bomber and conventional forces. In the KC-135 program, the major effort is to replace the current engines with CFM56 modern technology engines. We are continuing structural modifications, including the wing reskin program, and are correcting deficiencies in the refueling subsystems to enhance air refueling operations.

Reengining with CFM56 is the most cost-effective means of alleviating a serious and growing tanker shortfall. A reengined KC-135, designated the KC-135R, is on the average as capable as one and one-half KC-135As and will have a useful life well into the next century. Aside from increased tanker requirements, the KC-135R will also correct specific KC-135A operational and environmental deficiencies. With its performance improvements, the KC-135R will offload more fuel and provide increased operational flexibility by eliminating our current dependence on extremely long runways.

In addition, the new engines will offset the high and growing costs of operating and maintaining the present aging engines. Due to fuel efficiency alone, we estimate that a fleet of KC-135Rs would save approximately 110 million gallons of fuel per year, a five year savings of over $715 million. Finally, the KC-135R will meet Federal Aviation Administration noise and pollution standards which the current engines miss by a wide margin.

STRATEGIC DEFENSE

Strategic defense is an integral part of our strategy of deterrence. It is intended to provide timely, reliable, unambiguous warning and assessment of an enemy missile or bomber attack, defend against bomber and cruise missile strikes, and support our space surveillance and defense activities.

Atmospheric Warning and Defense

Over the past twenty years, the United States has significantly reduced forces assigned to atmospheric defense. On the other hand, the Soviet threat has increased in numbers and capability with the introduction of the BACKFIRE bomber and improved air-to-surface missiles. Given this growing threat, atmospheric surveillance and warning are required to support intercept operations and assure that retaliatory responses can be made. Competent atmospheric defenses are necessary to preclude U.S. vulnerability to a precursor bomber attack and to limit the damage that would be inflicted in follow-on bomber strikes. Our current atmospheric warning and defense systems have serious deficiencies which must be corrected.

Atmospheric defense of North America is a cooperative U.S.-Canadian effort. The atmospheric surveillance and warning system is configured to control access to North American airspace. It is composed of ground-based radars in the Distant Early Warning (DEW) Line, the CADIN-Pinetree system in southern Canada, and the Joint Surveillance System. During periods of crisis, surveillance and command and control of interceptor aircraft will be provided by the E-3A Airborne Warning and Control System (AWACS) aircraft. Interceptors currently assigned for atmospheric defense include F-106s, F-4s, and F-15s.

The Air Force has developed a master plan for tactical warning, attack characterization, and air defense and control which has largely been adopted by the Department of Defense. The first major initiative is to modernize our surveillance and warning system through development and deployment of two Over-the-Horizon (OTH) radars and an improved DEW Line.

The OTH radar will correct coverage deficiencies by providing wide-area, long-range, and all altitude warning of atmospheric attack from the East and West. Because of performance degradations from aurora effects, the OTH radar is not completely suitable as a North-looking surveillance and warning system. Therefore, we will improve the existing DEW Line radars with a mix of minimally attended long-range radars and short-range gap-filler radars. In the future, we intend to recommend deployment of a South-looking OTH radar to complete North American surveillance coverage.

Other significant improvements include additional F-15 and E-3A AWACS procurements. With its long-range radar and look-down, shoot-down capability, the F-15 will substantially improve our air interceptor force. The Air Force plans to eventually convert five active F-106 squadrons to F-15s. The E-3A is essential to ensure survivable surveillance and to meet command and control requirements. These procurements, coupled with improvements under development, will greatly enhance our atmospheric warning and defense capabilities.

Missile Surveillance and Warning

The credibility of our national defense policy of nuclear deterrence and escalation control are critically dependent on our ability to provide unambiguous, timely, reliable, survivable, and enduring warning and assessment of an enemy missile attack.

Ballistic missile attack warning and assessment are currently accomplished by space satellite systems, three Ballistic Missile Early Warning System (BMEWS) sites, the Perimeter Acquisition Radar Attack Characterization System radar, two PAVE PAWS SLBM detection and warning sites on East and West coasts, and the FPS-85 and FSS-7 SLBM radars in Florida.

One of our objectives for improving the capabilities of our current systems is to improve the resolution to go beyond providing simple attack warning. We want to be able to determine what kind of attack is in progress so that our selected response is appropriate. To achieve better attack assessment, we are developing the capability for more precise tracking and improved data processing to provide better preimpact and transattack assessment. This objective, as well as improved reliability and supportability, is supported by the BMEWS modernization program. A transattack and postattack assessment capability will be provided when the Integrated Operational Nuclear Detonations Detection System (IONDS) becomes operational. IONDS payloads will be carried on Navstar Global Positioning satellites.

In response to the growing Soviet SLBM threat, we are working to expand our SLBM warning system by deploying two additional PAVE PAWS radars in the southeastern and southwestern United States. These deployments will expand our coverage and enable us to phase out the older, less capable SLBM radars in Florida. We are also developing upgrades for all four PAVE PAWS radars which will provide improved warning and attack assessment.

We are continuing to pursue technology to support an advanced missile surveillance system for improved space-based attack assessment. Infrared data on earth background and ballistic missile signatures are being collected and analyzed in the Missile Surveillance Technology program. This effort supports development of the required technologies and design being conducted in the Advanced Warning System program.

Finally, we have a new program called Ballistic Missile Tactical Warning/Attack Assessment Support. This development program will develop the overall architecture for current and proposed systems to ensure that individual warning and attack assessment elements operate coherently as an integrated system.

Space Surveillance and Defense

Our space surveillance and defense program consists of four elements.

The first element focuses on improving our ability to monitor space activities. Surveillance is the key to our warning and defensive options, and in our SPACETRACK program, we are pursuing several near-term efforts to upgrade our surveillance capability. For the far term, the primary thrust of the Space Surveillance Technology program is to develop a spacebased surveillance system which will reduce or eliminate overseas basing, improve our coverage of objects and events in space, provide warning and verification of attacks on our satellites, and provide targeting and strike assessment for our own antisatellite program.

The second element is to make our satellites less vulnerable to attack. Demonstrated Soviet antisatellite capabilities and their potential to intervene electronically require that we take prudent steps to defend our satellites. In the Satellite Systems

Survivability program, we are developing technology and procedures which will increase the survivability of our satellites and their communication links and ground stations.

In the third element, the Space Defense Systems program is continuing the development of our own operational antisatellite capability to deter Soviet ASAT use and, if necessary, enable us to destroy hostile space systems that threaten our forces.

The fourth element provides the vital command, control, and communications to effectively integrate, coordinate, and manage all space defense resources. The North American Aerospace Defense Command Combat Operations Center program will develop the Space Defense Command and Control System in a phased approach to support the evolving space defense elements.

Other Strategic Defense

The Defense Support Program is a key element of our Nation's strategic defensive posture. This program provides data to the National Command Authorities, North American Aerospace Defense Command, and Strategic Air Command. Our development efforts are aimed at increasing the survivability of operational data through the development and deployment of truck-mounted Mobile Ground Terminals, improving the performance and life expectancy of follow-on satellites, and ensuring that follow-on satellites are compatible with the Space Shuttle. To maintain the operational capability of this vital system, new satellites must be procured to replace those that have failed, worn out, or are unable to meet the growing threat. To meet near-term requirements, four more DSP satellites are being procured, two in FY 1983 and two in FY 1984.

The Space Laser program has been initiated in accordance with Congressional direction to determine the utility and feasibility of space laser weapon systems. We recognize the need to have a much sounder base of research and advanced technology in this area before weapons development decisions can be made, and we are directing our efforts toward that end.

III. GENERAL PURPOSE

The major threat facing our general purpose forces continues to be the numerically superior forces of the Soviet Union/Warsaw Pact. Western strategy has relied heavily upon technological superiority to offset this quantitative advantage. However, massive Soviet investment has substantially reduced our qualitative advantage. Accordingly, we are pursuing carefully selected general purpose programs which enhance the flexibility, deployability, firepower, and relatively quick response of our tactical air force.

Our General Purpose programs are divided into six categories: Air-to-Surface Attack, Counterair, Electronic Combat, Reconnaissance, Mobility, and Other.

AIR-TO-SURFACE ATTACK

The most demanding conventional threat the U.S. and our NATO allies must be prepared to counter is an attack on Western Europe by the Warsaw Pact. Pact doctrine is intended to cause the quick collapse of NATO forces, and includes movement of their forces rapidly, with operations at night and in bad weather.

To counter this scenario, NATO depends heavily on the flexibility and responsiveness of tactical aircraft to bring power to bear rapidly in threatened sectors. In turn, the Soviets have equipped their ground forces with the most lethal air defense system ever assembled, and they are training to operate better in night and bad weather conditions.

To meet the Soviet challenge, we have constructed a modernization plan for maintaining our qualitative edge. In the near term, we will develop evolutionary improvements to our existing fighters while continuing balanced procurement of the F-16 and F-15. At the same time, we are developing capability improvements, such as the Low Altitude Navigation and Targeting Infrared System for Night (LANTIRN) system and standoff weapons.

While the single seat F-16 has excellent air-to-air and air-to-surface capabilities, it has limited night/in-weather attack capability. This limitation will be corrected by radar improvements and incorporation of the LANTIRN system as part of the Multinational Staged Improvement Plan (MSIP).

The MSIP is divided into three stages and is designed to ensure that planned changes to the F-16 will result in an effective counter to the Soviet threat. Stage I provides for essential structure, wiring, and interface changes. Stage II provides for aircraft avionics and subsystem improvements, and Stage III provides for installation of the improved systems.

In addition, we are evaluating a prototype derivative of the F-16 which offers improved air-to-surface capabilities, while maintaining its excellent theater air defense characteristics. This aircraft will begin flight tests this summer.

The F-15, our primary air superiority fighter, was designed to perform both air-to-air and air-to-surface missions. To better utilize its inherent ground attack capabilities, we are evaluating the development of a derivative F-15 aircraft with avionics and armaments improvements to obtain a long range, under-the-weather capability. With conformal fuel tanks, the F-15 can deploy worldwide with minimal tanker support and arrive configured to attain air superiority. It could then be reconfigured for surface attack missions against a variety of tactical targets.

We will conduct a comparative evaluation of the F-15 and F-16 derivatives to determine which candidate is the best platform to fulfill our requirement for a dual role fighter to conduct long-range, strike/attack missions. Further discussion of the F-15 and F-16 is included under the Counterair mission area.

We plan to buy 120 F-16s in FY 83 under a multiyear contract. These aircraft will help flesh out our active forces and modernize the Air Reserve Forces. Our plans include requests for 1,445 aircraft through FY 1987 with more to follow in later years. As of January 31, 1982, we have taken delivery of 365 production aircraft and activated 12 operational squadrons.

Our FY 1983 procurement of 20 A-10 aircraft completes the planned force of 727 aircraft. As of January 31, 1982, we have accepted 586 aircraft. All six of the planned USAFE squadrons are now operational. Four of the five planned Air National Guard squadrons are operational, as are two of four Air Force Reserve squadrons. The balance of the squadrons will be operational in FY 1983. This is one of the few occasions that substantial numbers of new first line combat aircraft have been delivered to active, guard, and reserve units concurrently.

We are improving existing weapons such as the Maverick missile and are developing a variation of the Laser Guided Bomb for delivery at low altitudes. The Low Level Laser Guided Bomb (LLLGB) expanded launch envelope allows for low level attack of fixed, high value, point targets such as bridges and tunnels. This improvement will reduce aircraft attrition, and enhance tactical flexibility. The LLLGB program also develops improved target acquisition capabilities under limited visibility conditions common to Europe.

We are planning to procure the Imaging Infrared (IIR) Maverick missile to expand our ability to destroy small, hard tactical targets during night and limited visibility conditions. It will complement the daylight only TV Maverick currently in the inventory and the laser version being developed for the Marine Corps. The Maverick can currently be employed on the F-4, A-7D, A-10, F-16 and the F-111F.

The Air Force will qualify a second source for the IIR Maverick to stimulate competition and to allow for increased annual production quantities. A qualification program is scheduled to start this year with an option for later production. We also plan to accomplish R&D to integrate the Maverick imaging infrared seeker with the GBU-15.

One of our most serious deficiencies is our inability to effectively attack targets at night and in adverse weather. Based on current technological assessments and the need to field a capability quickly, we are planning to correct this deficiency in steps. To provide a near-term capability for our single-seat A-10 and F-16 fighters, we are developing the LANTIRN system.

LANTIRN will allow us to capitalize on our fighter force investment by providing a 24-hour, under-the-weather, air-to-surface precision attack capability. It also allows our fighters to penetrate at low altitude, thus reducing exposure to defenses. Also, in the Night Attack Program and in the Technology Base mission area, we are investigating technologies which can expand our capability to attack targets in all weather conditions.

To deal with our disadvantage in numbers as well as the dense defenses of the Warsaw Pact, we are emphasizing weapons that achieve much higher effectiveness through accuracy and lethality, while reducing aircraft attrition through standoff or reduced exposure. The Advanced Attack Weapons and Wide Area Antiarmor Munitions programs provide for a family of area munitions, warheads, and guidance systems for a multiple armor kills-per-pass capability in weather and for delivery from minimum altitude. This capability will allow us to interdict second echelon forces before they can reinforce first echelon forces.

Weapons under development in these programs include the Antiarmor Cluster Munition (ACM) and the Wasp Missile System. We are requesting procurement funds for ACM (other procurement) in FY 1983 and the Wasp procurement request is scheduled for FY 1986. We are also procuring the 30mm gun pod to provide attack aircraft with capability against armor and other vehicles. The pod will provide a reliable, easy-to-employ, strap-on weapon and can be employed with the A-7, F-4, and F-16 fighter aircraft.

The PAVE MOVER Engagement System and PAVE MOVER program will develop the technology for a conventional, standoff weapon system capable of engaging multiple, second echelon targets. The primary purpose of the system is to delay, disrupt, and/or destroy massed Warsaw Pact ground forces. The system can use a variety of weapons. It can guide missiles carrying a payload of multiple submunitions or it can be used to vector penetrating aircraft to the target for delivery of advanced munitions, such as Wide Area Antiarmor Munitions.

A weapon under joint development with the Navy is the Medium Range Air-to-Surface Missile (MRASM). It is a conventionally armed cruise missile which will give aircraft the capability to engage high value targets, such as airfields and ships, while standing off beyond the range of enemy point defenses.

COUNTERAIR

Over the last few years Soviet tactical air has changed from primarily a limited range defensive force to a formidable of-

fensive force. They now have the capability to conduct strikes against targets anywhere in NATO Europe. In addition, they are fielding a new generation of fighters with many capabilities comparable to our present generation F-16 and F-15s and are developing a new air-to-air missile to give their aircraft a look-down, shoot-down capability.

To meet this challenge, the Air Force must continue to procure and improve F-15 and F-16 fighter aircraft. We must also acquire sufficient numbers of AIM 7/9 missiles to meet our inventory objectives. In the future, the Advanced Medium Range Air-to-Air Missile (AMRAAM) is required to equip the F-16 with an all-weather, air-to-air capability and to improve the lethality of our F-15 force.

The F-15 provides an outstanding close-in visual and medium range all-weather kill capability against enemy aircraft and has replaced the F-4E as our primary air superiority fighter in the tactical air forces. As of January 31, 1982, we have accepted 620 aircraft and have activated 16 of 20 operational squadrons. We plan to continue to procure F-15s to correct strategic defense force deficiencies, modernize tactical forces, and reach force structure goals.

The FY 1983 budget raises F-15 production to a more efficient rate and provides for advance procurement to support even more efficient rates in FY 1984. The increased rate coincides with the orderly incorporation of production avionics developed to enhance the F-15 in its mission.

The current adverse weather air superiority armament for the F-15 aircraft is the AIM-7 Sparrow air-to-air missile. The FY 1983 request is for the AIM-7M, the latest version. It has an advanced monopulse seeker which provides improved electronic counter-countermeasures (ECCM) capabilities and better look-down, shoot-down capability than the AIM-7F. These improvements provide an increased capability to destroy low altitude targets.

Sparrow performs a key role in countering the large number of enemy aircraft by providing the capability to attack enemy aircraft at medium beyond-visual-ranges. Because of a critical shortage of medium range missiles, our plan is to continue to procure the AIM-7 Sparrow until the more capable AMRAAM is available. Our near-term objectives are to increase the number of missiles available to our operational forces and to correct our current inventory shortage.

The AIM-9 Sidewinder is an air-to-air "dogfight" missile and is the primary within-visual-range air superiority armament for both the F-15 and F-16. The Sidewinder has shorter range than the AIM-7 and is heat seeking rather than radar controlled. The FY 1983 request is for the latest version, the AIM-9M, which has improved capabilities against infrared counter-countermeasures and improved acquisition/tracking ranges. As with the AIM-7 Sparrow, the supply of Sidewinder missiles is well below our inventory objectives. Our immediate objective is to increase the quantities on hand to improve our operational readiness.

Our RDT&E emphasis is on increasing the air-to-air capabilities of our fighters. The most important improvement under development is the AMRAAM. AMRAAM will provide significant improvements over current systems by employing technology which gives it a high kill probability from standoff ranges rather than being drawn into close-in dogfights. AMRAAM will give pilots the chance to win engagements, even if outnumbered, by attacking multiple targets before they can attack. The Air Force will equip both the F-15 and the F-16 with the AMRAAM, with first production delivery expected in late FY 1985. The Navy plans to use the AMRAAM on both the F-14 and F-18.

We are also stressing the development and integration of

beyond-visual-range identification technology into aircraft systems to fully exploit AMRAAM capabilities. Our identification developments are accomplished in two programs, Combat Identification Technology and Combat Identification Systems. These programs, as well as other service identification efforts, are coordinated and managed by a single joint program office.

In our fighter programs, we plan to improve mission effectiveness and logistics supportability. We are supporting radar improvements and AMRAAM integration for the F-15 and F-16 as part of the Multi-Staged Improvement Program. The improvements fall into several areas: target acquisition, identification and destruction, command and control, and self-protection. The program extends the operational effectiveness of the F-15 and F-16 by using available technology in combination with the aircraft's inherent growth potential.

To counter the 1990's threat we are planning to develop an Advanced Tactical Fighter (ATF). In FY 1983 we will begin work needed to ensure that potential solutions are adequately evaluated prior to a commitment to full scale development in 1987. Engines have traditionally had the longest development cycle of all fighter components, hence the ATF program includes development of an advanced engine.

ELECTRONIC COMBAT

Soviet air defense systems continue to grow in density, quantity and complexity as the Soviets develop and deploy new tactical and strategic air defense systems. These new systems emphasize mobility and use both radar and electro-optical means for target acquisition and tracking. Growth in their air defense capability has also been marked by increased reliance on command, control, and communications (C^3) as they strive to maintain a highly reliable, efficient, and integrated system.

Because of this growing threat, we have and will continue to place considerable emphasis on electronic combat. Our objective is to achieve a mix of systems which disrupt, degrade, deceive, or destroy an enemy's air defense network in order to ensure the survivability of our aircraft and aircrews. To accomplish this, we have programmed updates for our operational defense suppression systems, as well as continued development of several new systems to handle the highly sophisticated Soviet threat.

Today, the F-4G Wild Weasel is our primary system for destruction of tactical emitter systems, such as air defense radars. We have programmed funds to develop and procure updates to this system to keep pace with the evolving threat. We are also continuing with the Navy in the joint development and acquisition of the High Speed Anti-Radiation Missile (HARM), which will greatly improve the lethality of the F-4G. HARM will be used against surface-to-air missile radars, early warning radars, as well as air defense artillery. HARM can defeat not only the present but also the projected more sophisticated threat emitters.

The centerpiece for improving our long-term strike capability against emitters is the Precision Location Strike System (PLSS). PLSS is a near-real-time, all-weather system which will give us the capability to precisely locate and strike tactical targets, particularly time-sensitive air defense threats and to increase the effectiveness of our defense suppression assets. No other system, existing or proposed, can provide the unique capabilities of PLSS.

To provide a suitable weapon for PLSS, we have programmed funds to develop the Conventional Standoff Weapon (CSW). The CSW will be an air-launched, powered weapon capable of destroying high value targets. Deliverable from both tactical and strategic aircraft, CSW will allow sufficient standoff so that the launch aircraft

can remain outside the lethal envelope of target area threats. Although CSW will be used initially with PLSS for defense supression, we are also designing it for compatibility with other systems, such as the PAVE MOVER Engagement System, so that the weapon can be used for other missions.

To improve the nonlethal component of electronic combat we are emphasizing both support and self-protection electronic countermeasures (ECM). For support jamming we are continuing the EF-111A modification program to provide both a standoff and penetrating jamming capability to counter the Soviet early warning, ground control intercept and acquisition radars. The IOC is scheduled for November 1983, with the final delivery in FY 1986. The Soviet and Warsaw Pact forces are expected to continue to dramatically increase the number of these types of radars and to significantly improve their electronic counter-countermeasure capabilities. Updating the EF-111A reprogrammable jamming system will continue to be an ongoing effort.

Included in the EF-111A program is the development of an Operational Flight Trainer (OFT) to facilitate training of both the pilot and electronic warfare officer. The OFT is critical to establishing and maintaining operator proficiency, since security and other restrictions preclude realistic operation of electronic warfare equipment.

Since the Soviets are relying on their C^3 networks for effective battlefield management, we are placing heavy emphasis on tactical C^3 countermeasures. Our immediate emphasis is on Compass Call, an EC-130H aircraft designed to disrupt selected portions of the Soviet force management system. Our FY 1983 procurement program provides for modification kits for airframes. We expect delivery of the first operational aircraft later this year.

In the area of self-protection ECM, we are continuing to procure the ALQ-131 pods, as well as continuing with our staged improvement plan to keep the ALQ-131s current with the threat. In FY 1983, we will begin to procure a receiver/processor to provide power management capability. We will also begin modification to add monopulse jamming technology to existing ALQ-131s.

We are also updating radar warning receivers which alert our aircrews of impending attack and are reducing the proliferation of EW equipment, a Congressional co cern, through the joint development with the Navy of the Airborne Self-Protection Jammer (ASPJ) for the F-16 and F-18. F-16s will continue to carry ECM pods until the ASPJ is available. A production decision for ASPJ is planned for FY 1985.

RECONNAISSANCE

Reconnaissance and surveillance systems provide decision makers at all levels with the tactical information and intelligence data required to minimize the likelihood of surprise and to plan, move, and counter enemy initiatives. These same assets assist in offensive actions by locating key targets on the battlefield. Therefore, the development and deployment of these systems is critical to the credibility of NATO defense of Europe and to general U.S. combat capability wherever and whenever it might be employed.

To meet the tactical commanders' needs for near-real-time information, we plan to continue procurement of the TR-1 aircraft, a tactical version of the U-2R. The TR-1 is specifically designed to provide a continuous, high-altitude, standoff tactical surveillance capability. The aircraft will be equipped with the latest sensors, including the Advanced Synthetic Aperture Radar System (ASARS), which is planned for production in FY 1984. These sensors, along with associated ground stations, data link and

radio relays, will provide continuous day or night, all-weather surveillance of the battle area in near-real-time. The TR-1 aircraft is capable of carrying either the PLSS or the reconnaissance payload.

In FY 1983, we will initiate the Advanced Tactical Air Reconnaissance System (ATARS) program. It is a development effort to define a survivable, day/night, all-weather, penetrating reconnaissance capability. This program, coupled with sensor developments in our Reconnaissance Equipment program, will provide the flexible tactical reconnaissance capability needed to meet the future threat.

MOBILITY

To protect our global interests, the U.S. deploys some forces forward, prepositions limited amounts of material, but maintains the majority of our forces and supplies at home. These home-based forces, supported by mobility resources, serve as a centrally located strategic reserve which can be projected anywhere in the world.

Airlift is the most visible, responsive, and flexible element of our mobility resources. Its primary role is to project and sustain combat forces until other means of transportation can deliver the required follow-on support. In many situations, airlift is the only means of responding rapidly, because of either the geographic location or the speed with which the threat develops.

Existing airlift is seriously inadequate to meet the mobility requirements of our conventional war strategy. The Air Force RDT&E and procurement strategy will begin correcting the airlift shortfall. We have ongoing programs to improve the readiness, sustainability and capabilities of our current aircraft. Our programs include increasing spare part stocks and crew ratios to permit higher utilization rates of our C-5 and C-141 aircraft. In addition, we plan to increase inventories of C-5 and KC-10 aircraft.

The C-5A wing modification will provide a 30,000 hour wing, thus insuring its continued availability. The first aircraft entered the modification line in February 1982 and eight aircraft will be completed by the end of FY 1982. Other modifications planned for the C-5A include an improved weather radar and a fuel saving advisory system.

We also have a significant shortfall in our capability for long-range airlift of oversize and bulk cargo. The C-141 stretch program, which extends the fuselage and adds an air refueling receptacle, will increase C-141 average payloads by some 30 percent. This modification should be completed by June 1982. FY 1983 funds for the C-141 will continue needed improvements in several on-board systems such as station keeping equipment which provides the capability for brigade size airdrops in adverse weather. Even after completing the enhancements planned for the existing force, we still have serious shortfalls in our capability for intertheater airlift of outsize, oversize, and bulk cargo.

In addition, we continue to have a need for intratheater mobility and resupply. The C-130 is the backbone of our intratheater airlift force. We are requesting funds to continue modifications which will ensure the continued safe operation of this aircraft. Included is replacement of the outer wing boxes, with installation to begin in FY 1984.

We believe that procurement of additional KC-10s and C-5s is the best way to provide substantial near term improvement to the U.S. defense mobility posture. Both aircraft are already

in the Air Force inventory and their training and support elements are in place. The KC-10 is in production and the C-5 can be placed in production in a relatively short time.

The air-refuelable C-5 has intercontinental range and can carry all the major firepower and equipment items of our modernized ground forces. It is our only aircraft presently capable of transporting outsize cargo. Our in-service fleet of 77 aircraft is totally inadequate to meet our outsize cargo needs. We plan to increase the C-5 force to 127 aircraft by procuring 50 C-5Bs through FY 1987. The C-5B will be the C-5A design updated with all currently approved engineering change proposals--a 30,000 hour service life wing, modernized TF39-1C engines, improved avionics, and more durable and corrosion-resistant aluminum alloys.

By acquiring C-5Bs we will be able to begin promptly to correct the serious shortfall in our airlift capability and to improve our ability to transport large volume and weight cargo over intercontinental distances. Acquisition of C-5Bs will enhance our ability to reinforce Europe in the early hours and days of conflict and our ability to rapidly project combat forces worldwide. With no research and development required and an existing production base, we will be able to begin to field C-5Bs by the middle of this decade, well before a new production aircraft would be available.

Along with airlift, aerial refueling is essential to successful deployment operations. We are planning a force of 60 KC-10As and will complete procurement by FY 1987. The KC-10As will help reduce our dependence on foreign bases and enhance our capability for the rapid deployment of combat forces.

Airlifter cargo loads can be greatly increased and delivery times to the destination reduced through use of the KC-10A because of its large fuel offload and long range capabilities. The KC-10A will also help to free up KC-135 tankers which are required to support the strategic bomber force. However, some KC-135s will still be needed during a conventional crisis to assist in the deployment and employment of tactical fighter forces and to provide critically needed refueling to airlift forces.

Other key mobility programs include Operational Support Airlift and Combat Helicopter Modernization. Operational Support Airlift is part of a new initiative--the European Distribution System (EDS). The purpose of EDS is to provide assured wartime distribution of critical spares and aircraft engines in the European theater to enhance readiness and sustainability.

The EDS program consists of three elements: logistics C^3, forward stockage of spares in Europe, and assured air transportation of critical spares and aircraft engines. Our procurement program supports this last element and includes plans for 18 small, off-the-shelf commercial cargo aircraft. Our FY 1983 request procures the first two EDS aircraft. It also includes a limited amount of RDT&E for development of the logistics C^3 element and a modified skid system to transport fighter aircraft engines on the class of cargo aircraft being procured.

The Combat Helicopter Modernization program addresses the urgent need to modernize the Combat Rescue and Special Operations Forces to cope with increasing threats and to overcome severe maintenance problems resulting from obsolescent equipment. We are developing a derivative of the Army UH-60 Black Hawk--a helicopter of proven reliability, maintainability, and survivability. Using the basic H-60, we are integrating improved avionics for precision low-level navigation at night and in adverse weather, adding auxiliary fuel tanks, and an air refueling capability, and installing other necessary Air Force mission equipment. We will begin procuring this helicopter, which is designated the HH-60D, in FY 1984.

OTHER GENERAL PURPOSE

Because of their uniqueness, the Ground Launched Cruise Missile (GLCM), Rapier surface-to-air missile, F-5E/F, and Chemical/Biological Defense Equipment programs are included in a separate area of General Purpose programs.

GLCM, a surface-to-surface variant of the Tomahawk cruise missile, is a major initiative to enhance our theater nuclear forces. The GLCM requirement stems from concern among our allies about the credibility of the Alliance's nuclear deterrent. In 1979, in response to the adverse trend in strategic nuclear forces and the deployments of the SS-20 ballistic missile and BACKFIRE bomber, the Alliance reached a decision to adopt a combined program of theater nuclear forces modernization and arms control. Under the terms of this program, the Alliance will move ahead with deployments of the Pershing II and the GLCM, while simultaneously advancing theater nuclear arms reduction proposals. In FY 1983 we are requesting funds to procure 120 missiles and to continue our RDT&E effort.

Currently, our air bases in the United Kingdom are not protected from hostile aircraft by point defense systems. We are procuring the British developed Rapier short-range air defense fire units which will be operated by the Royal Air Force (RAF). In addition, we will procure test equipment and pay for maintenance and restocking of spares. The United Kingdom will pay for the RAF personnel needed.

The F-5E/F procurement program is essential to provide realistic air combat training to our front line fighter forces. The aggressor mission provides Dissimilar Air Combat Training (DACT) sorties to maximize our tactial air force's (TAFs) training and readiness. The TAF currently has four Aggressor squadrons flying F-5Es. This force is not large enough to fulfill current sortie requirements and, over the past few years, has attrited to the point where additional aircraft are required to maintain the force. The planned F-5 procurement program in FY 1983 and FY 1984 will provide the necessary backup aircraft inventory and maintain the force.

Finally, our forces may be called upon to withstand a chemical/biological attack and conduct operations in a toxic environment. In the past few years, we have progressed from a nearly non-existent chemical/biological defense capability to a limited capability at our bases in Europe. But attaining an improved and extended defensive capability is contingent upon our RDT&E program.

In the Chemical/Biological Defense Equipment program, we are developing protective clothing, protective shelters, decontamination materials and equipment and devices to detect and warn of chemical/biological agents. We strongly support production of an improved, binary chemical weapon, Bigeye, as an essential element of modernizing our aging and inadequate chemical retaliatory stockpile. We urgently need Bigeye to help restore a credible chemical deterrent capability.

IV. SPACE

Because our space systems have unique capabilities, they can perform many missions more efficiently than earthbound systems. Therefore, effective military operations on the modern battlefield increasingly depend on spaceborne surveillance, warning, communications, meteorological, and navigation support.

The Soviets are well aware of the military utility of operating in space and have committed significant resources toward a sizable space presence. Over the last decade, Soviet space launches have significantly exceeded those of the U.S., with the majority of their launches being for military purposes. The Soviets are

supporting an active man-in-space program, and they have deployed and continue to test an operational antisatellite capability.

In contrast, we are concentrating our efforts on doing more with each launch by deploying satellites with multiple missions and with much longer operational life. To optimize our deployment and on-orbit capabilities, we are developing a new space launch capability, improving our space operations capabilities, and aggressively pursuing advanced, space-related technology.

The Nation's new space launch capability--the manned, reusable Space Shuttle--is being developed by the National Aeronautics and Space Administration (NASA), with extensive Department of Defense (DOD) participation. The Shuttle provides major new capabilities and offers the potential to revolutionize our operations in space. We are taking the necessary actions to transition our spacecraft from expendable launch vehicles to the Shuttle and are carefully analyzing how we can use the unique capabilities offered by the Shuttle to enhance our mission effectiveness.

The Air Force, as the DOD executive agent for the Shuttle, has several crucial responsibilities. We are developing and producing the Inertial Upper Stage (IUS), which provides the capability to deliver spacecraft from the Shuttle parking orbit to higher orbits. We are also responsible for the development, construction, and operation of the West Coast Shuttle launch and landing facilities at Vandenberg AFB, California. Polar and near polar launches will be conducted from Vandenberg AFB in support of all Shuttle users--civil as well as military. In addition, we are working with NASA to modify their existing facilities and equipment to meet unique defense requirements.

The Space Launch Support program funds DOD Shuttle operations costs and the orbital flight charge reimbursement to NASA and procures the IUS and Payload Assist Modules Delta class (PAM-D) for all Air Force space programs. Beginning in FY 1983, the IUS procurement approach will be changed from an annual fully funded basis to a consolidated (Air Force, other DOD, NASA) eight vehicle buy every two years. This approach was adopted to reduce material and manufacturing costs.

The importance of our space assets to national security makes it essential that we maintain our current space booster capability during the transition period to Shuttle. This backup capability will protect against delays or any unanticipated problems while bringing Shuttle to an operational status. These efforts are being supported by our Space Boosters program. The program strategy is to maintain the critical Titan III production base until the Shuttle's ability to support DOD missions is demonstrated.

We are also improving our ability to operate in space. The obsolete computer system used by the Satellite Control Facility (SCF) to control on-orbit satellites severely limits our current operations. The SCF Data System Modernization program will correct this limitation and give us the ability to better operate existing satellites and the flexibility needed to control more sophisticated satellites currently in development.

We are also continuing work on the new Consolidated Space Operations Center (CSOC). For management, operational, and economic efficiencies, CSOC combines two major space missions for DOD: satellite control, and Space Shuttle flight planning, readiness and command/control. In the role of satellite control, CSOC will enhance our operational capabilities by providing greater mission responsiveness and increased survivability. With regard to survivability, the Satellite Test Center and CSOC will provide mutual emergency backup for mission essential functions should outages occur at either center. In its other role, CSOC will directly control DOD Shuttle missions and enhance protection of national security information. During early Shuttle operations, this function must be performed by the NASA Shuttle

control facility at Johnson Space Center (JSC), but JSC is very limited in its ability to conduct highly classified operations. Survivability for this function will also be increased by having two facilities, with JSC serving as the backup to CSOC for DOD missions.

The Air Force is committed to maintaining the technical superiority of our space systems through continual testing of new concepts and by investigating the effects of the space environment on our systems. The Space Test Program (STP), Space Vehicle Subsystems, Advanced Military Spaceflight Capability, as well as various Technology Base projects, support this objective.

The tri-service STP provides the spaceflights for DOD experimental payloads needed to gather information critical to the development of future space systems. STP simplifies the experimenter's job by centralizing management for the tasks needed to launch a payload. Furthermore, STP has been designated by DOD to lead in developing the Space Shuttle as a manned space laboratory.

The Space Vehicle Subsystems program investigates promising space vehicle subsystems technologies which offer improvements in the effectiveness, efficiency, weight, and survivability of our space vehicles. Current efforts are focused on space guidance, space power supply, satellite secondary propulsion, and space computer technologies.

The Advanced Military Spaceflight Capability program is an FY 1983 new start which will provide the technology to permit the development of a quick response, flexible, survivable, and economical military space transportation system in the mid- to late-1990s. We plan to define the military utility of alternative configurations and develop the pacing of exceptionally promising technologies. We have structured the program to allow us to decide in the mid- to late-1980s whether to proceed with system development of any of the concepts.

Two major satellite programs included in the Space mission area are the Defense Meteorological Satellite Program (DMSP) and the Navstar Global Positioning System (GPS). DMSP satisfies our need for accurate and timely weather data, which is vital to successful military operations. DMSP, an operational advanced weather system, is DOD's most important single source of weather data. Our procurement program involves acquisition of replacement satellites, launch systems, and special sensors. The RDT&E program supports DMSP transition to Shuttle launch in 1990.

Successful military operations also require a knowledge of the location of force elements. We are developing Navstar GPS to meet this requirement by providing users in all services with precise position information on a 24-hour, global basis under all weather and visibility conditions. This capability will significantly enhance the mission effectiveness of all U.S. forces. In addition, the system holds real promise for numerous civilian applications. GPS satellites will also play another vital defense role by being hosts for Integrated Operational Nuclear Detonation Detection System (IONDS) payloads. IONDS will provide damage and strike assessment information, thereby enhancing strategic force management. Very accurate global detection and reporting of nuclear detonations will be available for the first time when this system is deployed.

V. COMMAND, CONTROL, AND COMMUNICATIONS

Command, control, and communications (C^3) systems are essential to implement strategy, control forces, and employ weapons in modern warfare. These systems support day-to-day operations, provide time-critical warning information to decision makers, facilitate accurate situation monitoring and allocation

of resources in crisis situations, and permit the appropriate and effective employment of military power in wartime. Recognizing our dependence on C^3, the Soviets place heavy emphasis in their doctrine on the disruption of C^3. The threats include both physical and electronic attacks.

In response to this growing threat, our primary objective is to increase the survivability, security, and jam-resistance of our C^3 links. Another objective is to improve both the reliability and interoperability of our systems. Finally, we want to exploit new technologies to more effectively meet future threats and satisfy our C^3 requirements.

STRATEGIC C^3

Our strategic C^3 programs include warning and assessment systems, command centers, and supporting communications systems. Since the warning and assessment systems were discussed in the Strategic Defense section on Chapter II, this section will concentrate only on command centers and communications.

One of the key features of the President's strategic program is the modernization of strategic C^3. For deterrence to be a successful strategy, we need effective strategic C^3 systems to support the employment of our nuclear forces. In the past, we have not modernized our C^3 systems fast enough. As a result, these systems have insufficient survivability and reliability to operate reliably over an extended period following a Soviet attack. Consequently, we are increasing the survivability and endurance of our strategic C^3 systems. Our objective is to make these systems as strong as the forces they support.

A primary program for command and control of our strategic forces is the Air Force Satellite Communications (AFSATCOM) System. The AFSATCOM system consists of aircraft terminals, ground terminals, and communications packages on several satellites, including the Fleet Satellite Communications (FLTSATCOM) System, Satellite Data System (SDS), and classified host spacecraft. In our AFSATCOM RDT&E program, we will develop improved terminals and super high frequency (SHF) communications equipment which will be carried on the Defense Satellite Communications System (DSCS) III spacecraft and installed in missile launch control facilities. These RDT&E initiatives will provide more resistance to jamming and nuclear weapon effects.

We are installing AFSATCOM terminals in strategic bombers, reconnaissance and surveillance aircraft, ground and airborne command centers, and missile launch control facilities. The Army and Navy are also acquiring terminals. For FY 1983, we are requesting procurement funds for an AFSATCOM communications package to be integrated on host spacecraft to ensure continuity of communications in critical geographic areas.

SDS is a major part of the AFSATCOM system and provides critical two-way transpolar command and control communications for our nuclear capable forces. SDS also supports a data communications network among remote tracking stations and the Satellite Test Center for command and control of our satellites. The FY 1983 RDT&E program completes development of a Shuttle-compatible spacecraft and the procurement program sustains the capability to launch satellites to replenish the orbital constellation.

For the future, we are developing a new satellite communications system called MILSTAR to replace FLTSATCOM and SDS to fulfill the urgent need for highly jam-resistant and survivable satellite communications. MILSTAR will feature increased jam-resistance through the use of extremely high frequency (EHF) communications and increased survivability through a variety of techniques. It is a joint Army, Navy, Air Force program which will support both strategic and tactical users.

The E-4 and EC-135 aircraft are survivable extensions of the fixed command centers and provides higher confidence in our ability to manage strategic forces during a nuclear war. We are developing several improvements to these airborne command posts: SHF and ultra high frequency (UHF) satellite communications terminals, a high-powered very low and low frequency (VLF/LF) terminal, improved communications processing, electromagnetic pulse (EMP) testing, and integration of terminals for on-board processing of IONDS data. These systems have anti-jam features and will support operations in a nuclear environment over extended ranges.

Our FY 1983 aircraft modification program includes procurement funds for installing automatic data processing equipment to improve the E-4B battle staff's ability to provide critical and time sensitive information to the National Command Authorities. Procurement funds are also requested to harden the EC-135 against nuclear effects.

Other strategic C^3 programs are Strategic Air Command (SAC) Communications and Minimum Essential Emergency Communications Network (MEECN). Under the SAC Communications program, we are developing the SAC Digital Network (SACDIN). SACDIN modernizes SAC's existing hard copy C^3 system, which is aging and has insufficient capacity. SACDIN objectives are to provide responsive, two-way, secure command and control information between SAC Headquarters and subordinate commanders. The system, in addition to providing greater survivability, will also feature increased flexibility and growth capacity.

The MEECN program contains three key projects: VLF/LF Improvements, Adaptive High Frequency/Very High Frequency (HF/VHF), and the CONUS Groundwave Network. VLF/LF Improvements provide for improved dissemination of war orders via the secure VLF/LF system and the development of a small VLF/LF receiver for bomber aircraft. Adaptive HF/VHF will provide a modular family of radios which will improve the reliability of two-way communications in a nuclear or jamming environment. The CONUS Groundwave Network project develops a grid of unmanned, EMP hardened, jam-resistant relay communications nodes which will be collocated with existing commercial broadcast towers where feasible.

TACTICAL C^3

Our existing tactical C^3 systems also have a number of critical deficiencies which require correction. Chief among these is their susceptibility to enemy jamming. Accordingly, we are taking action to add jam-resistance to our existing tactical voice communications network. We are now implementing the HAVE QUICK modification to provide a near-term jam-resistant voice capability for our existing UHF radios. At the same time, we are using more advanced technology to develop an improved system, SEEK TALK, that will provide the jam-resistance necessary to respond to the projected mid-to-late 1980s jamming threat.

In addition to jamming susceptibility, other major deficiencies of existing tactical C^3 systems include delays in passing time-critical information through communication system nodes and the lack of common reference points to coordinate the tactical air battle. Although much combat information is suited to voice communications, aircraft controllers and voice links can become saturated when voice is relied upon as the sole means of real-time communications. Studies show that certain elements of data are passed more efficiently over digital data links. The Joint Tactical Information Distribution System (JTIDS) will correct these deficiencies. JTIDS provides jam-resistant, secure communications between force elements using a digital data link which allows command and control systems to share and exchange more information. Also, each JTIDS terminal can compute its position relative to other terminals, thus providing location

and identification of all participating platforms in a common reference grid, as well as an on-board navigation capability.

The tactical communications resources which support the Tactical Air Forces are old and lack adequate capacity to support traffic handling needs. To provide the minimum essential command, control, and communications to support deployed tactical forces, major improvements are needed for the equipment assigned to Air Force Combat Communications and Tactical Air Control System units. In support of this need, we are working with the Army to develop secure, jam-resistant, digital communications equipment through the Joint Tactical Communications Program (TRI-TAC).

The E-3A aircraft provides mobile, survivable and jam-resistant wide area radar surveillance, along with highly sophisticated data processing, data relay, and secure communications capabilities. We are currently producing a U.S./NATO standard configuration E-3A, which integrates JTIDS, a maritime capable radar, and a larger computer into the basic core E-3A. Additional improvements are needed to maintain E-3A effectiveness and to correct deficiencies revealed by operational experience. Improvements underway or planned include development of additional situation display consoles and radios, a command console, and electronic counter-countermeasures to ensure continued effectiveness in the projected threat environment.

Our FY 1983 procurement request provides for the purchase of two E-3As and long lead for one aircraft. In addition, we are contributing to the NATO Airborne Early Warning program which calls for the purchase of 18 E-3As. This program will provide additional capability for the defense of NATO, while at the same time improve Alliance standardization and interoperability.

DEFENSE-WIDE C^3

Major programs in Defense-Wide C^3 include DSCS, Communications Security (COMSEC) equipment, and Advanced Space Communications. DSCS is a maturing, evolutionary DOD system developed to provide SHF satellite communications for secure voice and high data rate transmissions. DSCS provides unique and vital national security communications for worldwide military command and control, crisis management, intelligence and early warning data relay, treaty monitoring and surveillance information, and Presidential and diplomatic traffic.

Our remaining DSCS RDT&E task is to develop DSCS III satellites. DSCS III will provide increased capacity, flexibility, and electronic counter-countermeasure capability. In support of strategic forces, they will also include a UHF/SHF capability for emergency war order dissemination and force execution. The DSCS procurement program provides for replacing DSCS II satellites with DSCS III. Two DSCS III satellites will be procured in FY 1983.

The COMSEC program prevents enemy exploitation of the communications relayed through spacecraft. Anti-jamming and authentication devices are being developed and procured to prevent an enemy from interfering with the control of our spacecraft. In addition, COMSEC devices provide protection for telemetry data during weapons testing.

The concepts, techniques, and advanced technologies for military satellite communications systems capable of surviving in the intense electromagnetic jamming environments expected in the future are developed in the Advanced Space Communications program. Our development activities include efforts in laser communications and in advanced airborne terminal and satellite technologies required for jam-resistant operations. Several of these projects develop selected technologies needed for MILSTAR and DSCS III.

VI. MANAGEMENT, SUPPORT, AND DEFENSE-WIDE SYSTEMS

The remaining programs which support and increase the effectiveness of our military forces fall into three categories: Management, Support, and Defense-Wide Systems.

MANAGEMENT

Management includes programs which pay for the people employed by Air Force Systems Command who develop and acquire Air Force systems. These programs also pay for the activities which support those scientists, engineers, and managers. The FY 1983 request will provide approximately the same level of support as in FY 1982.

SUPPORT

This category contains programs which fund the operation of Air Force development-oriented test centers and ranges, as well as the development of equipment used on these ranges for test and evaluation and for training. We will continue to stress projects that improve our test capabilities since much of our equipment and facilities date to the 1950s. Modernized facilities and equipment not only improve the quality of testing, but also promote greater productivity, which holds down test costs.

The Test and Evaluation Support program funds the base operating functions and test and evaluation activities at Eglin AFB, Florida; Arnold AFS, Tennessee; and Edwards AFB, California; as well as the test and evaluation activities at the 4950th Test Wing, Wright-Patterson AFB, Ohio. These facilities support other services and government agencies, as well as Air Force programs.

The Improved Capability for Development Test and Evaluation program consolidates all of the major Improvement and Modernization (I&M) projects at the development-oriented test centers and ranges. I&M projects were initiated and funded through FY 1982 in the Test and Evaluation Support program. We decided to separate the I&M effort from the base operating effort to provide for better management visibility and control.

We need a realistic environment to test and evaluate weapon systems and train aircrews. The Range Improvement Program develops threat radar systems to simulate the combat arena, instrumentation to provide aircrew feedback on mission performance, and data collection for test and evaluation. The Aerial Target Program provides targets to evaluate new air-to-air weapon systems, develop and test new tactics, and provide realistic training.

DEFENSE-WIDE SYSTEMS

The programs in Defense-Wide Systems are those which support more than one defense mission. Major programs include Modular Automatic Test Equipment (MATE), Next Generation Trainer (NGT), and three programs relating to aircraft engine development. In addition, we have programs to accomplish common aircraft modifications.

Aircraft availability in support of force readiness has suffered because of malfunctioning test equipment at all maintenance levels. The MATE program addresses this problem and will provide effective automatic test equipment (ATE) at the lowest possible life cycle cost through the use of a standardized acquisition management process and modular ATE hardware and software.

NGT is needed to replace the aging T-37 as our primary jet trainer. NGT will retain the proven formula of twin engines and side-by-side seating, while eliminating the major shortcomings of the T-37. The most significant changes will be a much needed anti-icing capability, advanced turbofan engines for reduced

fuel consumption, and a pressurized cockpit for greater training flexibility. In addition, NGT will provide reduced operating costs, greater range and endurance, and will be equipped with more comprehensive instrumentation.

The programs relating to aircraft engines are Engine Model Derivative Program (EMDP), Aircraft Engine Component Improvement Program (CIP), and Alternate Fighter Engine. EMDP provides a mechanism to incorporate advanced technology into current inventory engines to achieve significant durability, reliability, and/or performance improvements. Previously, when the Air Force needed a derivative engine, it proceeded directly into a full scale development program. The EMDP represents a more timely, less risky approach to meeting near-term propulsion system needs.

Aircraft Engine CIP demonstrates solutions to service-revealed difficulties and cost-of-ownership problems. Experience shows that it is impossible to identify or solve all engineering problems during the engine qualification process. Some problems emerge only after years of operational service. The CIP is, therefore, a critical part of the engine acquisition and management process. Furthermore, past CIP efforts have demonstrated large cost avoidance payoffs. We will continue with an aggressive CIP to enhance Air Force operational readiness, maintain required performance, and ensure acceptable cost of ownership.

The Alternate Fighter Engine program provides for the competitive development of more durable/supportable engines for the F-16 and F-15 engine procurements in the late 1980s. Our strategy is to maintain fair and full competition in the fighter engine business through concurrent developments of improved versions of the Pratt and Whitney F100 engine and the General Electric F101 Derivative Fighter Engine. We will conduct a competition based on durability, reliability, maintainability, and operability characteristics demonstrated in test and supported by contractor warranties. Assuming two fully acceptable engines are developed, we expect to reduce the cost of ownership while simultaneously obtaining the maximum benefits of competition in terms of acquisition cost and contractor support.

Our multi-aircraft modification program represents a broad range of modifications that are not unique to a particular weapon system. They are designed to maintain present capability, improve performance, and/or lower support costs. An example is a modification to replace HF radios in selected aircraft over several years. Another modification replaces electro-mechanical analog central air data computers in various aircraft with a digital version, resulting in improved reliability and maintainability.

VII. READINESS-SUSTAINABILITY

To make full use of our investments in modern weapon systems we must make similar investments in readiness and sustainability. This will assure that our forces are ready for combat on short notice and capable of sustained military operations.

In our FY 1983 budget submission, we have continued to place priority emphasis on improving the combat preparedness and staying power of our forces. What I discuss here represents only some of these needs; additional requirements, such as bombs and fuel, are reflected in other appropriations.

This section does not represent a unique mission area. The costs associated here are included in the mission areas they support. Included are the missile and aircraft spares and repair parts, war consumables, common ground equipment, and simulators.

AIRCRAFT AND MISSILE SPARES AND REPAIR PARTS

Adequate funding of aircraft and missile spares is vital to peacetime readiness and wartime sustainability. Our aircraft program consists of two distinct elements; initial spares and replenishment spares. Initial spares are items peculiar to a weapon system being introduced for the first time and includes items required to support the procurement of new aircraft, modifications to aircraft, aircraft support equipment, and spare engines. Initial spares are programmatic; that is, if we increase or decrease our weapon system or modification programs, our requirements for spares vary accordingly. We are submitting a fully funded program for FY 1983. Included are spare parts, engines, and modules for the F-15/F-16 fighters, the cornerstones of our tactical forces. In addition, our FY 1983 request includes emphasis on the B-1B and TR-1 programs.

Replenishment spares are required to provide continuing support for the life of our weapon systems. We segment our replenishment spares into three categories--Peacetime Operating Stock (POS), War Readiness Spares Kits/Base Level Self-Sufficiency Spares (WRSK/BLSS), and Other War Reserve Materiel (OWRM). The POS supports peacetime training and forms the baseline of spare parts from which the Air Force transitions into war. WRSK/BLSS spares support the initial wartime surge, while OWRM spares provide wartime sustainability until industrial production can sustain wartime operations.

The replenishment spares budget request for FYs 1981 and 1982 marked a timely shift in emphasis from aircraft procurement to sustaining our systems and improving our readiness. By the end of FY 1982 we will have approximately $5.0 billion in spare parts on order. However, because of a two year lead time, we will not achieve increased capability until FYs 1983 and 1984 when the on order spares are received. Our FY 1983 request continues to emphasize achieving the full combat potential of our weapon systems by providing a sustaining capability. POS and WRSK/BLSS are fully funded and OWRM will provide wartime sustainability for our C-5, C-141 and C-130 aircraft.

Included in the FY 1983 replenishment spares request are funds closely linked with the Air Force Industrial Facilities Program discussed in Chapter IX. The funds will be used to improve industry's capability to expedite delivery of critical components during a conflict. If a conflict does not occur, cost savings will be realized because the end items are semi-finished and could be used in other programs. If a conflict does occur, the long lead times are significantly reduced.

Our missile spares and repair parts have been fully funded in the past several years. Because of this, we have continued to have high mission capable rates in the missile program. Continued Congressional full funding is vital to the progress we have made in upgrading logistics support to our missile forces and maintaining high missile capable rates.

WAR CONSUMABLES

The War Consumables program provides such things as external fuel tanks, bomb racks, adapters and pylons. They are procured as replacements for those items jettisoned from aircraft under wartime conditions. Currently we are procuring equipment for the F-16 and HH-53 helicopter, as well as HARM and Maverick launchers.

AIRCRAFT COMMON GROUND EQUIPMENT

The Common Ground Equipment program is a key factor in the overall readiness and sustainability posture of our air forces. It provides those items necessary to maintain, service, and test aircraft and their components. These items are used throughout

the Air Force logistics complex--on the flight line, in base maintenance shops, and at the centralized maintenance activities.

Approximately 50 percent of our request provides equipment for new aircraft entering the inventory. The remaining portion of the budget is for equipment replacement, requirements as a result of aircraft modifications, and War Reserve Materiel (WRM) build-up to support Rapid Deployment Force (RDF) objectives.

SIMULATORS

Achieving a high state of mission readiness through improved training is the primary objective of the Air Force Flight Simulator program. The most important value we expect from modern simulator investments is to attain combat mission readiness through training in a more efficient and effective manner. However, simulation is not a substitute for, but a complement to, actual "in-flight, hands-on" proficiency training.

Simulation can improve flying training efficiency by allowing students to develop specific skills by concentrating their efforts in a particular area. Flight safety is also enhanced by allowing the student to practice hazardous or restricted maneuvers which are not allowed in the aircraft. Use of simulators increases aircrew performance in an actual weapon system. This is accomplished by exposure to a realistic threat environment and an ability to practice actual combat tactics--some of which are prohibited in peacetime.

With the right combination of flight simulators and aircraft, we intend to: maintain and improve the combat readiness of experienced aircrews, provide effective initial and continuation training for student pilots and aircrew members, reduce training and operating costs, and conserve scarce resources such as energy, weapons, and ammunition.

We have many simulators now in the field, including those for the F-15, A-10, C-5, B-52, C-130, E-3, T-37, and T-38. These have varying degrees of capability. We are continuing to procure simulators for the F-16 and F-15, and have funds programmed to procure EF-111 simulators and C-5/C-141 Aerial Refueling Part Task Trainers. The Air Force expects to continue its flight simulator procurement program in the future for new systems such as the Next Generation Trainer (NGT) and the B-1B. We are also initiating efforts to upgrade existing systems in the field to extend their useful lives and improve their supportability.

VIII. TECHNOLOGY BASE

Technology Base is the foundation of our future combat capability. It has four specific goals: maintain technological superiority over potential adversaries; protect against technological surprise; provide options for developing effective, affordable, and supportable weapon systems; and solve technical problems which hamper mission performance. To achieve these goals, we are pursuing a variety of integrated Research, Exploratory Development, and Advanced Technology Development programs.

Air Force Technology Base programs are accomplished by a combination of industry, university, and in-house personnel. Although oriented toward solving Air Force problems, our Technology Base is also a key national asset because it expands the base of knowledge and encourages innovation.

MAJOR TECHNOLOGY BASE PROGRAMS

The Air Force Technology Base program focuses effort on practical solutions to identified operational, logistics, and personnel needs. It also fosters innovative ideas with the potential for revolutionary impact on the conduct of military

missions. The following paragraphs briefly describe some of our high payoff technology programs in terms of seven functional areas--Materials, Propulsion, Flight Vehicles, Electronics, Weaponry, Environment, and People.

Materials

Our Materials programs are driven by the need for lighter, stronger, cheaper, more durable materials, and by the increasing uncertainty of supply for many strategic materials. Our efforts in rapid solidification technology and powder metallurgy support these objectives by seeking to produce alloys impossible by other methods, yet yielding high strength, low weight, toughness, and corrosion resistance.

The success of weight-reducing composite materials in aircraft as diverse as the B-1, F-16, F/A-18, and AV-8B provides incentive to develop these materials for primary aircraft structures. We are also pursuing radar absorbing coatings and structures which can help us penetrate and elude enemy defenses.

Recognizing that laser radiation will pose a growing threat to our weapon systems, we are working to provide laser hardness without degrading system performance.

Propulsion

Emphasis in turbine engine technology has shifted from performance toward improved durability, while maintaining an active core performance program. Air Force advanced engine development is concentrated in two complementary programs, Advanced Turbine Engine Gas Generator (ATEGG) in which we assess and test advanced turbine engine core components; and Aircraft Propulsion Subsystem Integration, where we integrate engine cores from ATEGG with other advanced components to test technology demonstrator engines. These programs will pave the way for turbine engines that will be smaller, more powerful, more efficient, and much more durable.

Technology improvements in tactical rocket propulsion, such as minimum smoke propellants and thrust controllable solid fuel motors, will pay valuable dividends in increased survivability and kill probability in air-to-air combat. To advance space system propulsion, we will apply the technology developed for M-X to improve the IUS motor performance and begin development of improved satellite attitude control systems. We are also developing technologies which will significantly increase solar cell efficiency, power generations, and on-board power storage.

Flight Vehicles

A major goal of our research and technology is to improve aircraft performance. A key program is the Advanced Fighter Technology Integration (AFTI) program. AFTI consists of three demonstration projects--Fighter Attack Technology, Mission Adaptive Wing, and Short Takeoff and Landing Fighter Technology. Fighter Attack Technology integrates into the AFTI/F-16 testbed advanced aeronautical technologies, digital flight control, and improved pilot-vehicle interface for enhanced survivability and weapon delivery accuracy.

Mission Adaptive Wing, to be flight tested in 1983, integrates advanced structures and an automatic control system for a smooth skin, variable camber wing to extend range and expand the flight envelope in all flight regimes.

The Short Takeoff and Landing Fighter Technology project begins in FY 1983 and is a crucial facet of our program to reduce dependence on fixed runways. Using a variety of advanced technologies, we will demonstrate ways to greatly reduce takeoff and landing distances.

The combined use of microelectronics and composite structural materials has increased the vulnerability of avionics systems to electrical transients from lightning and static electricity. We are conducting a multi-agency project, Atmospheric Electricity Hazards Protection, to prevent these factors from limiting future operations.

Electronics

Integrated circuit technology is the keystone of modern avionics. The Very High Speed Integrated Circuits (VHSIC) joint program provides the technology for the next two generations of integrated circuits. The result will be greatly enhanced performance with reduced acquisition and support costs.

In order to get our aircraft and weapons to their targets under all environmental conditions, we will initiate a new program, Advanced Airborne Radar Development. It will develop a night/all-weather radar featuring the use of covert acquisition techniques to help penetrate heavily defended areas.

In our new Advanced System Integration Demonstrations (PAVE PILLAR) program, we are taking a new approach to the design and acquisition of avionics. Instead of a piecemeal insertion of navigation, detection, communication, and flight control systems, PAVE PILLAR will result in a standard avionic architecture.

As we push for all-weather capability, radars must perform multiple functions, yet be more reliable than tube-type radars. Small, solid state modules, combined in an array permit multifunction operation, replace troublesome tubes and offer significant improvements in reliability, size, and weight. We have already built solid state modules to prove design concepts; the next step will be to design, build, and demonstrate an active array.

Weaponry

Effective weapons are those which produce maximum damage, yet are lightweight, easily delivered, and affordable. We seek these characteristics in both revolutionary new weapons and in improvements to traditional ones.

With high energy lasers, we are entering a new era in weapons, and the Air Force will remain in the forefront of developing this technology. Looking farther to the future, we are pursuing studies to determine if particle beams can be used as effective weapons. We will continue experiments to provide proof-of-principle of very intense electron beam propagation.

In FY 1983, we will transition a new nitrate-based explosive into advanced development. We believe this new explosive can be produced at half the cost of current general purpose explosives using readily available raw materials and existing plants. Its insensitivity and thermal stability will greatly expand the number of usable transportation and storage facilities, a characteristic of great importance in the NATO environment.

Environment

The environment in which we operate can impose limits on what we do in carrying out the Air Force mission. We must find ways to stretch environmental limits, both natural ones and those imposed by the enemy.

We are continuing the Rapid Runway Repair project to reduce the time our runways will be unusable after an attack. Our goal is to develop technology to launch and recover 100 fighter aircraft within one hour after an airfield attack and conduct sustained operations within a few hours.

Recognizing weather can greatly affect precision guided munitions, we have begun to develop methods to gather meteorological data needed to produce tactical decision aids for planners and aircrews.

In FY 1983, we will begin a new program, Space Systems Environmental Interactions Technology, to assess the effects of the space environment on large, high power space systems.

People

People are our most important resource. While the technology content of our defense systems grows, the potential supply of skilled manpower decreases. Consequently, we will continue to develop procedures to ensure the most effective person/job match. This research will allow us to evaluate the tradeoffs of alternative personnel quality and quantity force compositions. In addition, we will expand the knowledge needed to quantify the impact of economic factors on recruiting and retention in order to develop policies which will allow us to compete effectively for skilled manpower. We will also continue programs which improve performance and productivity through better training and people-matched equipment design.

In FY 1983, we will begin devlopment of the Combat Mission Trainer, which will use the latest advances in display and image generation technology to develop a realistic, low-cost, portable, and easy to maintain simulator. It will give pilots the opportunity to train realistically with terrain, defenses, and targets comparable to those found in combat.

In order to upgrade our chemical warfare defensive capabilities, we accelerated our exploratory development work and started a new advanced development program called Chemical Warfare Defense. We will continue to stress effectiveness, ease of use, and interoperability with our NATO partners.

We will initiate a new advanced development program, Crew Systems Technology, to specifically address aircrew life support and protection needs. The program will focus on eye protection against laser flash blindness, on-board oxygen generating systems, and g-suit/pressure suit developments.

THE TECHNOLOGY BASE CHALLENGE

As we pursue our efforts to ensure that technology will be ready for our future weapons systems, we face three substantial challenges.

The first challenge comes from our chief adversary, the Soviet Union. Over the past ten years, the Soviets have outspent us in RDT&E by 50 percent. Currently their RDT&E outlays are twice ours, and the gap is projected to widen. The Soviets also produce four times the number of engineers as the U.S. each year. In addition, the Soviet system of design bureaus provides a continuity of effort for which there is almost no comparison in the U.S. While there are certainly offsetting U.S. advantages, we cannot ignore the disturbing trends in the growing quality and sophistication of Soviet military hardware--trends which reflect an erosion of our technological superiority.

The second challenge is to strengthen the Technology Base program. In spite of determined efforts to strengthen the Technology Base investment, we have had little real growth. In terms of purchasing power, our investment in Research and Exploratory Development, the foundation of Technology Base, is now at less than 60 percent of the mid-1960 level. It has remained essentially level since 1976. Our current operational systems use technology developed in the 1960s and early 1970s, when real funding was much higher. Our efforts in the early 1980s will

impact weapon systems of the 1990s and beyond. Therefore, we must ensure that we do not neglect this importance area.

The third challenge is the supply of talented people. No matter what our funding, we cannot accomplish our goals without an adequate supply of competent, dedicated scientists and engineers. Currently, Air Force Systems Command is short more than 500 scientists and engineers. We are making every effort to overcome this shortage and believe that recent initiatives by Congress and DOD in improving pay and other incentives will help close the current manpower gap.

The FY 1983 Technology Base program is the Air Force's response to critical challenges to our future. It provides a lean, focused foundation for national technological health in defense science and technology and includes real growth to allow timely exploitation of operationally promising technologies.

IX. AIR FORCE MANAGEMENT

The Air Force is continually striving to improve our program management. The challenge for greater efficiency in our acquisition management process is driven by the rapidly growing external threat, the erosion taking place in the purchasing power of our defense dollars, and the deteriorating capability of our defense industrial base. I will describe some of the specific management actions we are taking in the areas of technology planning, NATO initiatives, and acquisition management. These actions apply across the spectrum of system acquisition.

TECHNOLOGY PLANNING

Two initiatives we have for efficient technology planning and execution are Vanguard and the Concept Development program. The Vanguard planning system is a continuing initiative to improve the efficiency of technology and development programs. Vanguard planners integrate threat information, scenario data, and mission area objectives to prepare a master plan for research and development needs and programs. Implemented by Air Force Systems Command, the Vanguard System provides a comprehensive roadmap of the planned contributions and interrelationships of all Air Force development and procurement programs.

Concept Development is a new program to promote a few, promising, high payoff concepts where basic technology exists. This program should reduce the acquisition time by trimming one to two years from the concept exploration, demonstration, and validation phases of early development. This is made possible because concepts compete with each other for funding and manpower support and not with ongoing programs.

NATO INITIATIVES

The Air Force encourages effective armament cooperation with our NATO allies through such initiatives as the family of weapons concept, dual production, and development of reciprocal purchasing memoranda of understanding. Our objectives are to increase combat effectiveness through standardization and interoperability, strengthen the overall military and industrial capability of the Alliance, reduce unnecessary duplication of programs, and conserve our vital defense resources.

Through the family of weapons concept, Alliance requirements are harmonized for discrete mission areas. When complementary systems are found to be compatible, shared development programs may be undertaken. The memorandum of understanding (MOU) for advanced air-to-air missile systems was signed by the U.S., United Kingdom, Germany, and France in August 1980, and is the first use of this concept. France presently has special observer status in this program, while the others are full participants. The U.S. will develop and initiate production of the Advanced Medium Range Air-to-Air Missile (AMRAAM), and Germany

and the United Kingdom will jointly develop and initiate production of the Advanced Short Range Air-to-Air Missile (ASRAAM). The MOU allows the participants to co-assemble or produce the other's missile. This joint project will save the U.S. the cost of developing the next generation ASRAAM.

The establishment of dual production capabilities for the same weapon system, such as the F-16, on both sides of the Atlantic may be accomplished through license arrangements. This provides for standardization and savings of funds that would have otherwise been spent to develop similar systems.

The third initiative involves the reciprocal purchasing memoranda of understanding for defense equipment. In support of this initiative, the Air Force has fostered understanding of our acquisition process through sponsored visits by foreign industries to our Systems and Logistics Commands. In addition, we have a European Workload Program with the objective of increasing our readiness in Europe by placing some maintenance and overhaul capability there. Other examples of cooperation include the NATO E-3A Airborne Warning and Control System, the Navstar Global Positioning System, the purchase from the United Kingdom of the Rapier missile for point air defense of our air bases there, the reengining of the KC-135 with the U.S.-French developed CFM56 engine, and the United Kingdom's development of LANTIRN's heads-up display.

In keeping with present administration policy, the Air Force is actively encouraging the expansion of contacts between U.S. and other NATO country industries to determine and define areas of collaboration. This expansion of contacts will allow participating governments to harmonize their respective requirements and enable efficient teaming of industry to propose the most cost-effective solutions to defense requirements.

ACQUISITION MANAGEMENT

The Air Force has a number of acquisition initiatives to ensure that the money provided by Congress is spent wisely. These initiatives are in the areas of acquisition policy, contracting actions, and program management.

Acquisition Policy

Air Force acquisition policy has been developed to facilitate the timely, economical, and effective acquisition of Air Force systems and equipment. Our policy has been updated to reflect energy conservation, supportability, and affordability. We have also changed our policy to reflect the acquisition improvement efforts initiated by the Deputy Secretary of Defense.

Starting from the beginning and continuing through all phases of a program, program managers and all levels of review are required to consider energy efficiency. The KC-135 reengining program, Next Generation Trainer, aircraft simulator programs, and incorporation of Fuel Savings Advisory Systems on C-5, C-141, and C/KC-135 aircraft are examples which reduce future energy needs.

Our acquisition policy reflects a new emphasis on weapon system supportability. Supportability considerations are included early in the design process along with system performance, cost, and schedule requirements.

An affordability assessment is also performed to determine the program cost and its impact on available resources and to establish an early commitment to fund all phases of acquisition if the program is approved. By determining the affordability of a program throughout its life cycle, we are better able to adjust the phasing of programs which require large resource commitments to make them more affordable.

Controlled decentralization allows the Air Force to develop and implement acquisition policy within the bounds of broad, long range policy guidance provided by the Office of the Secretary of Defense. This gives us more flexibility in developing more specific policy to meet our unique requirements. We are giving the program manager more authority and are pushing the decision making down to the lowest level at which a total view of a given issue exists. This approach results in less interference from higher management levels, quicker decisions, and better use of people.

Policy changes relating to funding are intended to ensure adequate funding of programs throughout the acquisition cycle by budgeting to the most likely cost. This approach allows the program manager more flexibility in the use of funds and will decrease the chances of a program exceeding its cost thresholds.

Both controlled decentralization and budgeting to the most likely cost will contribute to program stability. However, because a large portion of cost growth can be attributed to production quantity and schedule changes caused by funding or technical problems, the potential for savings that can be realized through program stability demands further management measures. Toward that end, we have selected programs where the potential savings are greatest, and we are committed to provide the necessary funding to keep them stable. To do this, we have had to cancel or defer lower priority programs after carefully weighing the potential savings through program stability against the loss in military capability resulting from the cancellations and deferrals.

Contracting Actions

The Air Force has several ongoing contracting actions to deal with the eroding purchasing power of our defense dollars. These actions are in the areas of competition, contracting methods, multiyear procurement, and our efforts to require industry to take greater responsibility for the quality of their products during the operational phase.

The Air Force will continue its firm commitment to increase competition. Through our acquisition policies and reviews, competitive acquisition strategies are encouraged to the maximum extent possible. Through competition, we are seeking more innovative solutions to our defense problems, higher quality products, and fair prices for those goods and services we buy.

Although we emphasize competition, we also recognize that a substantial amount of acquisition dollars are spent for follow-on requirements of existing systems. In such cases where additional competition may be impractical, the Air Force reviews and applies appropriate contracting methods to obtain fair prices for our weapon systems. We use firm fixed price contracts, fixed price incentive contracts, and other appropriate contract types to stimulate efficient contract performance.

Because of Congressional action taken last year, the potential to use multiyear procurement has been expanded. Multiyear procurement could result in average dollar savings of 10 to 15 percent through improved economies and efficiencies in production processes, economy-of-scale lot buying, better utilization of industrial facilities, and a reduction in the administrative burden of administering contracts.

We are currently using the multiyear procurement strategy for the F-16, TRC-170 Troposcatter Radio, and Defense Support Program and plan to use it on Navstar GPS. For FY 1983, we are proposing it for the Defense Meteorological Satellite Program. Other possible candidates include the F-15, KC-135 Reengining, ALCM, and KC-10 programs. We will propose additional multiyear candidates when it has been determined that they meet the criteria

of: significant benefit to the Air Force; stable requirements, configuration, and funding; and confidence in cost estimates and contractor capabilities.

We are continually interested in contractor responsibility for quality, reliability, maintainability, and availability after items are in Air Force use. As an example, we are refining our procedures on the use of warranties. We have begun to work out guidelines with industry on the application of warranties and have begun applying warranties to many products. Included in the Air Force budget are funds to provide warranties on the ALCM program and the TF34 and F100 engine programs.

Program Management

The Air Force is actively pursuing, with DOD agencies and defense contractors, ways to deal with the economic factors that are adversely affecting our acquisition process. Our efforts include the use of economic production rates, implementing preplanned product improvement, and increasing the productivity of defense industries.

Recognizing that procurement at more economic production rates reduces unit costs and decreases acquisition time, we are striving within the funding flexibility allowed to improve the efficiency of our production programs. We compare budgeted or recommended levels of production with the most economic levels of production and require strong rationale where these rates differ significantly.

Productivity in the defense sector of the U.S. economy has been lagging, in large part, because of low levels of capital investment. Cash flow problems, tax policy, high interest rates, and low return on investment tend to limit available investment capital. This situation has resulted in a tendency to shift from defense to commercial business and a reduction of funds available to improve the capability to handle defense business.

With the help of Congress, we are beginning to make progress in this critical area. For example, the Economic Recovery Tax Act of 1981 is a positive step forward in encouraging capital investment by permitting more rapid capital equipment depreciation.

In order to provide an improved cash flow environment conducive to greater investment and improved productivity, we have raised progress payment rates across the board from 80 to 90 percent. At the same time, we have provided for a more efficient, less costly way to make progress payments (once vice twice a month).

Industrial Preparedness is our primary program for increasing productivity in defense industries. The program consists of four interrelated efforts: Industrial Facilities, Industrial Preparedness Planning, Manufacturing Technology (MANTECH), and Industrial Productivity and Responsiveness Improvement.

Industrial Facilities provides for the maintenance, rehabilitation, and expansion of Air Force-owned facilities and equipment. Under Industrial Preparedness Planning, we perform industrial base analysis and planning. Peacetime readiness, surge, and mobilization industrial capacity deficiencies, gaps, and opportunities for productivity improvements are identified and corrective plans developed. The MANTECH effort demonstrates advanced manufacturing techniques to reduce product cost and lead time, to improve productivity, and to improve product quality in a production environment. Industrial Productivity and Responsiveness Improvement provides technology generation, technology implementation, and industrial capitalization through the Technology Modernization (Tech Mod) concept. This concept links government technology investments through one or more acquisition contracts to stimulate industrial capital investment.

X. CONCLUSION

Mr. Chairman, this concludes my statement. Our Nation faces a serious threat today--a threat that has been heightened in part because of our unilateral self-restraint and the hope that the Soviets would do likewise. Unfortunately, this approach has not worked. While we held back, the Soviets have modernized and expanded their military capability at such a determined pace that they now threaten to achieve clear, overall military superiority.

To counterbalance the massive Soviet military buildup, we have taken great care in structuring the Air Force's RDT&E and Aircraft and Missile Procurement programs so that they fully support, in conjunction with the other elements of the defense program, our national security objectives. Our programs are the result of detailed and careful deliberations. Our emphasis continues to be on those programs that will improve our operational readiness and sustainability. Both long and short term considerations were carefully weighed, and we made a determined effort to prioritize our needs within fiscal constraints. In addition, we are emphasizing better management while working with our allies and the other services to develop and procure cost effective and supportable weapons systems.

I strongly urge your support for the RDT&E and the Aircraft and Missile Procurement programs I have described. If you have questions, I will be happy to answer them at this time.

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TABLE I
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 AIRCRAFT PROCUREMENT ESTIMATES
(In Millions of Dollars)

	QTY	FY 83 ESTIMATES
COMBAT AIRCRAFT		
B-1B Strategic Bomber	7	$ 3,868.1
A-10 Attack Aircraft	20	357.3
F-5F Tactical Fighter	3	28.5
F-15 Tactical Fighter	42	1,602.2
F-16 Tactical Fighter	120	1,958.7
KC-10A Advanced Tanker/Cargo Aircraft	8	790.1
E-3A Airborne Warning and Control System	2	166.3
	202	8,771.2
AIRLIFT AIRCRAFT		
C-5B Airlift Aircraft	2	800.0
European Distribution Aircraft	2	5.0
	4	805.0
OTHER AIRCRAFT		
TR-1	4	156.5
MODIFICATION OF IN-SERVICE AIRCRAFT		2,600.0
AIRCRAFT SPARES & REPAIR PARTS		3,656.6
AIRCRAFT SUPPORT EQUIPMENT & FACILITIES		
Common Ground Equipment		332.6
Industrial Responsiveness		147.4
War Consumables		140.8
Other Production Charges		960.5
NATO Airborne Early Warning and Control		186.1
		1,767.4
AIRCRAFT PROCUREMENT, AIR FORCE		$17,756.7

Note: Totals may not add due to rounding.

TABLE IV
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

STRATEGIC

PE #	TITLE	FY 83
	STRATEGIC OFFENSE	
11213F	MINUTEMAN SQUADRONS	12.9
63311F	ADVANCED STRATEGIC MISSILE SYSTEMS	49.7
64312F	M-X	2759.3
11113F	B-52 SQUADRONS	121.8
11142F	KC-135 SQUADRONS	29.0
63258F	COMMON STRATEGIC ROTARY LAUNCHER (CSRL)	64.1
63319F	ADVANCED CRUISE MISSILE TECHNOLOGY	26.8
64226F	B-1B	753.5
64361F	AIR LAUNCHED CRUISE MISSILE (ALCM)	186.8
64738F	PROTECTIVE SYSTEMS	110.2
	SUBTOTAL	4114.1
	STRATEGIC DEFENSE	
12325F	JOINT SURVEILLANCE SYSTEM	1.2
12411F	SURVEILLANCE RADAR STATIONS/SITES	1.1
12412F	DEW RADAR STATIONS	8.0
12417F	CONUS OVER-THE-HORIZON RADAR SYSTEM	79.2
12313F	BALLISTIC MSL TAC WARNING/ATK ASSESSMENT SPT	1.3
12423F	BALLISTIC MSL EARLY WARNING SYSTEM (BMEWS)	10.3
12432F	SLBM RADAR WARNING SYSTEMS	2.6
12433F	INTEGRATED OPERATIONAL NUDETS DETECTION SYS	19.9
31357F	INTEGRATED OPERATIONAL NUDETS DETECTION SYS	2.0
63424F	MISSILE SURVEILLANCE TECHNOLOGY	9.7
63425F	ADVANCED WARNING SYSTEM	20.8
12424F	SPACETRACK	5.5
12450F	SPACE DEFENSE OPERATIONS	6.5
63428F	SPACE SURVEILLANCE TECHNOLOGY	40.3
63438F	SATELLITE SYSTEMS SURVIVABILITY	22.5
64406F	SPACE DEFENSE SYSTEMS	211.8
12311F	NORAD COMBAT OPERATIONS CENTER (COC)	25.4
12431F	DEFENSE SUPPORT PROGRAM (DSP)	120.4
63426F	POST ATTACK RECONNAISSANCE	9.9
63603F	SPACE LASER PROGRAM	40.6
	SUBTOTAL	639.0
	TOTAL	4753.1

TABLE IV
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

STRATEGIC

PE #	TITLE	FY 83
	STRATEGIC OFFENSE	
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	SUBTOTAL	4114.1
	STRATEGIC DEFENSE	
12325F	JOINT SURVEILLANCE SYSTEM	1.2
12411F	SURVEILLANCE RADAR STATIONS/SITES	1.1
12412F	DEW RADAR STATIONS	8.0
12417F	CONUS OVER-THE-HORIZON RADAR SYSTEM	79.2
12313F	BALLISTIC MSL TAC WARNING/ATK ASSESSMENT SPT	1.3
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	SUBTOTAL	639.0
	TOTAL	4753.1

TABLE V
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

GENERAL PURPOSE

PE #	TITLE	FY 83
	AIR-TO-SURFACE ATTACK	
27129F	F-111 SQUADRONS	39.3
27131F	A-10 SQUADRONS	6.5
27133F	F-16 SQUADRONS	86.1
63230F	ADVANCED TACTICAL FIGHTER (ATF)	27.3
63249F	NIGHT ATTACK PROGRAM	4.5
63363F	HYPERVELOCITY MISSILE	1.0
63609F	ADVANCED ATTACK WEAPONS	18.0
63747F	PAVE MOVER	2.0
64201F	AIRCRAFT AVIONICS EQUIPMENT DEVELOPMENT	21.2
64249F	NIGHT/PRECISION ATTACK PROGRAM	103.8
64602F	ARMAMENT/ORDNANCE DEVELOPMENT	20.6
64607F	WIDE AREA ANTIARMOR MUNITIONS (WAAM)	8.5
64608F	CLOSE AIR SUPPORT WEAPON SYSTEM (CASWS)	5.4
64612F	LOW LEVEL LASER GUIDED BOMB (LLLGB)	3.0
64614F	MEDIUM RANGE AIR-TO-SURFACE MISSILE (MRASM)	42.7
64616F	PAVE MOVER ENGAGEMENT SYSTEM	29.3
64733F	SURFACE DEFENSE SUPPRESSION	4.7
	SUBTOTAL	423.9
	COUNTERAIR	
27130F	F-15 SQUADRONS	125.3
63742F	COMBAT IDENTIFICATION TECHNOLOGY	17.5
64314F	ADVANCED MEDIUM RANGE AIR-TO-AIR MSL (AMRAAM)	207.6
64725F	COMBAT IDENTIFICATION SYSTEMS	20.6
	SUBTOTAL	371.0
	ELECTRONIC COMBAT	
27136F	F-4G WILD WEASEL SQUADRONS	21.5
27162F	TACTICAL AIR-TO-GROUND MISSILES	4.8
64220F	ELECTRONIC WARFARE COUNTER RESPONSE (EF-111A)	27.3
64606F	CONVENTIONAL STANDOFF WEAPON	38.9
64724F	TACTICAL C^3 COUNTERMEASURES	19.0
64737F	AIRBORNE SELF-PROTECTION JAMMER (ASPJ)	46.7
64739F	TACTICAL PROTECTIVE SYSTEMS	28.1
64742F	PRECISION LOCATION STRIKE SYSTEM (PLSS)	98.9
	SUBTOTAL	285.2

TABLE V - Cont'd

PE #	TITLE	FY 83
	RECONNAISSANCE	
27247F	TACTICAL SURVEILLANCE SYSTEMS	.3
27431F	TACTICAL AIR INTELLIGENCE SYSTEM ACTIVITIES	8.3
63239F	ADVANCED TACTICAL AIR RECONNAISSANCE SYSTEM	4.0
64321F	TACTICAL FUSION CENTERS	9.9
64710F	RECONNAISSANCE EQUIPMENT	7.7
64750F	INTELLIGENCE EQUIPMENT	18.5
64756F	SIDE LOOKING AIRBORNE RADAR (SLAR)	27.2
	SUBTOTAL	75.9
	MOBILITY	
41115F	C-130 AIRLIFT SQUADRONS	.7
41118F	C-141 AIRLIFT SQUADRONS	1.3
41119F	C-5A AIRLIFT SQUADRONS	8.1
41314F	OPERATIONAL SUPPORT AIRLIFT	2.6
64753F	COMBAT HELICOPTER MODERNIZATION	32.3
	SUBTOTAL	45.0
	OTHER GENERAL PURPOSE	
64362F	GROUND LAUNCHED CRUISE MISSILE (GLCM)	28.6
64601F	CHEMICAL/BIOLOGICAL DEFENSE EQUIPMENT	16.3
	SUBTOTAL	44.9
	TOTAL	1245.9

TABLE VI
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

SPACE

PE #	TITLE	FY 83
35110F	SATELLITE CONTROL FACILITY (SCF)	60.2
35119F	SPACE BOOSTERS	15.0
35130F	CONSOLIDATED SPACE OPERATIONS CENTER (CSOC)	32.1
35160F	DEFENSE METEOROLOGICAL SATELLITE PROGRAM	27.8
35171F	SPACE LAUNCH SUPPORT	16.4
63401F	SPACE VEHICLE SUBSYSTEMS	4.3
63402F	SPACE TEST PROGRAM (STP)	62.6
63406F	ADVANCED MILITARY SPACEFLIGHT CAPABILITY	2.7
64411F	SPACE SHUTTLE	355.6
64778F	NAVSTAR GLOBAL POSITIONING SYSTEM (GPS)	122.8
	TOTAL	699.5

TABLE VII
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

COMMAND, CONTROL, AND COMMUNICATIONS

PE #	TITLE	FY 83
	STRATEGIC C^3	
11312F	POST ATTACK COMMAND AND CONTROL SYSTEM (E-4)	24.0
11316F	SAC COMMUNICATIONS	28.1
12310F	WWMCCS ADP - NORAD/ADCOM	6.2
33131F	MINIMUM ESSENTIAL EMERGENCY COMM NETWORK	49.6
33152F	WWMCCS INFORMATION SYSTEM	8.4
33601F	AIR FORCE SATELLITE COMM (AFSATCOM) SYSTEM	50.9
33603F	MILSTAR	79.8
35158F	SATELLITE DATA SYSTEM	7.9
63735F	WWMCCS ARCHITECTURE	15.1
	SUBTOTAL	270.0
	TACTICAL C^3	
27411F	OVERSEAS AIR WEAPON CONTROL SYSTEM	3.5
27412F	TACTICAL AIR CONTROL SYSTEM	5.4
27417F	TACTICAL AIRBORNE COMMAND/CONTROL SYS (E-3A)	78.9
27423F	ADVANCED COMMUNICATIONS SYSTEMS	78.2
28010F	JOINT TACTICAL COMM PROGRAM (TRI-TAC)	52.9
63789F	C^3 ADVANCED DEVELOPMENT	18.3
64754F	JOINT TACTICAL INFORMATION DISTRIBUTION SYS	52.5
64779F	JINTACCS	3.8
	SUBTOTAL	293.5
	DEFENSE-WIDE C^3	
33110F	DEFENSE SATELLITE COMMUNICATIONS SYSTEM (DSCS)	53.1
33126F	LONG HAUL COMMUNICATIONS (DCS)	9.5
33144F	ELECTROMAGNETIC COMPATIBILITY ANALYSIS CENTER	7.3
33401F	COMMUNICATIONS SECURITY	1.6
35114F	TRAFFIC CONTROL/APPROACH/LANDING SYSTEM	5.1
63431F	ADVANCED SPACE COMMUNICATIONS	52.3
63726F	FIBER OPTICS DEVELOPMENT	2.9
63727F	ADVANCED COMMUNICATIONS TECHNOLOGY	6.1
64740F	COMPUTER RESOURCE MANAGEMENT TECHNOLOGY	5.0
	SUBTOTAL	142.9
	TOTAL	706.4

TABLE VIII
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

MANAGEMENT, SUPPORT, AND DEFENSE-WIDE SYSTEMS

PE #	TITLE	FY 83
	MANAGEMENT	
65304F	ACQUISITION AND COMMAND SUPPORT-TELECOMM	4.8
65806F	ACQUISITION AND COMMAND SUPPORT	269.2
65890F	INSTALLATION AUDIOVISUAL SUPPORT (R&D)	5.6
65898F	MANAGEMENT HEADQUARTERS (R&D)	35.3
	SUBTOTAL	314.9
	SUPPORT	
64211F	ADVANCED AERIAL TARGETS DEVELOPMENT	13.9
64735F	RANGE IMPROVEMENT	25.3
64747F	ELECTROMAGNETIC RADIATION TEST FACILITIES	7.5
64755F	IMPROVED CAPABILITY FOR DT&E	46.5
65708F	AIRCRAFT NAVIGATION SYSTEM VERIFICATION	15.6
65807F	TEST AND EVALUATION SUPPORT	354.3
78019F	UTAH TEST AND TRAINING RANGE	2.1
	SUBTOTAL	465.2
	DEFENSE-WIDE SYSTEMS	
A1004F	INTERNATIONAL ACTIVITIES	2.8
35887F	ELECTROMAGNETIC COMBAT INTELLIGENCE SUPPORT	2.6
63226F	DOD COMMON PROGRAMMING LANGUAGE (ADA)	6.9
63228F	NEXT GENERATION TRAINER (NGT) AIRCRAFT	52.4
63244F	AIRCRAFT NON-NUCLEAR SURVIVABILITY	2.0
63248F	CONCEPT DEVELOPMENT	1.0
63707F	WEATHER SYSTEMS	3.4
63714F	DOD PHYSICAL SECURITY EQUIPMENT-EXTERIOR (AD)	3.9
64212F	AIRCRAFT EQUIPMENT DEVELOPMENT	1.9
64218F	ENGINE MODEL DERIVATIVE PROGRAM (EMDP)	10.3
64222F	NUCLEAR WEAPONS SUPPORT	2.3
64223F	ALTERNATE FIGHTER ENGINE	94.1
64227F	FLIGHT SIMULATOR DEVELOPMENT	5.4
64233F	TANKER-TRANSPORT-BOMBER (TTB) TRAINING SYSTEM	.6
64247F	MODULAR AUTOMATIC TEST EQUIPMENT (MATE)	34.6
64268F	ACFT ENGINE COMPONENT IMPROVEMENT PGM (CIP)	120.5
64706F	LIFE SUPPORT SYSTEM	12.4
64707F	WEATHER SYSTEMS	4.1
64708F	OTHER OPERATIONAL EQUIPMENT	16.6
64711F	SYSTEMS SURVIVABILITY (NUCLEAR EFFECTS)	13.9
64715F	DOD PHYSICAL SECURITY EQUIPMENT-EXTERIOR (ED)	18.6
65101F	PROJECT AIR FORCE	16.2
65306F	RANCH HAND II EPIDEMIOLOGY STUDY	.8
65808F	ADVANCED SYSTEMS ENGINEERING/PLANNING	5.4
65872F	PRODUCTIVITY IMPROVEMENT	2.2
78011F	INDUSTRIAL PREPAREDNESS	2.0
78026F	PRAM PROGRAM	9.7
	SUBTOTAL	446.6
	TOTAL	1226.7

TABLE IX
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1983 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

TECHNOLOGY BASE

PE #	TITLE	FY 83
61101F	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	13.1
61102F	DEFENSE RESEARCH SCIENCES	165.9
62101F	GEOPHYSICS	37.8
62102F	MATERIALS	46.2
62201F	AEROSPACE FLIGHT DYNAMICS	61.2
62202F	AEROSPACE BIOTECHNOLOGY	41.7
62203F	AEROSPACE PROPULSION	58.6
62204F	AEROSPACE AVIONICS	67.7
62205F	TRAINING AND SIMULATION TECHNOLOGY	18.5
62302F	ROCKET PROPULSION	37.1
62601F	ADVANCED WEAPONS	44.5
62602F	CONVENTIONAL MUNITIONS	37.4
62702F	COMMAND, CONTROL, AND COMMUNICATIONS	69.8
62703F	PERSONNEL UTILIZATION TECHNOLOGY	7.2
63103F	ADVANCED AIRBORNE RADAR DEVELOPMENT	3.5
63202F	ACFT PROPULSION SUBSYSTEM INTEGRATION (APSI)	21.5
63203F	ADVANCED AVIONICS FOR AIRCRAFT	18.2
63205F	FLIGHT VEHICLE TECHNOLOGY	7.3
63208F	RECONNAISSANCE SENSORS/PROCESSING TECHNOLOGY	6.4
63211F	AEROSPACE STRUCTURES AND MATERIALS	23.5
63215F	AVIATION TURBINE FUEL TECHNOLOGY	8.7
63216F	ADVANCED TURBINE ENGINE GAS GENERATOR (ATEGG)	31.0
63227F	ADVANCED SIMULATOR DEVELOPMENT	10.7
63231F	CREW SYSTEMS TECHNOLOGY	4.1
63245F	ADVANCED FIGHTER TECHNOLOGY INTEGRATION (AFTI)	11.0
63250F	LINCOLN LABORATORY	23.1
63253F	ADVANCED SYSTEM INTEGRATION DEMONSTRATIONS	16.4
63259F	CARTOGRAPHIC APPLICATION FOR TAC & STRAT SYS	.9
63302F	ADVANCED MISSILE PROPULSION	.9
63410F	SPACE SYSTEMS ENVIRONMENTAL INTERACTIONS TECH	1.6
63452F	VERY HIGH SPEED INTEGRATED CIRCUITS (VHSIC)	66.0
63601F	CONVENTIONAL WEAPONS TECHNOLOGY	20.0
63605F	ADVANCED RADIATION TECHNOLOGY	95.1
63718F	ELECTRONIC WARFARE TECHNOLOGY	18.7
63723F	CIVIL AND ENVIRONMENTAL ENGINEERING TECHNOLOGY	4.5
63728F	ADVANCED COMPUTER TECHNOLOGY	5.0
63743F	ELECTRO-OPTICAL WARFARE	15.9
63745F	CHEMICAL WARFARE DEFENSE	4.9
63750F	COUNTER COUNTERMEASURES ADVANCED DEVELOPMENT	7.0
63751F	INNOVATIONS IN EDUCATION AND TRAINING	3.1
	TOTAL	1135.7

GLOSSARY

ACFT	Aircraft
ACM	Antiarmor Cluster Munition
AFB	Air Force Base
AFS	Air Force Station
AFSATCOM	Air Force Satellite Communications
AFTI	Advanced Fighter Technology Integration
AGM	Air-to-Ground Missile
AIM	Air Intercept Missile
ALCM	Air Launched Cruise Missile
AMRAAM	Advanced Medium Range Air-to-Air Missile
ARM	Anti-Radiation Missile
ASARS	Advanced Synthetic Aperture Radar System
ASPJ	Airborne Self-Protection Jammer
ASRAAM	Advanced Short Range Air-to-Air Missile
ATARS	Advanced Tactical Air Reconnaissance System
ATB	Advanced Technology Bomber
ATE	Automatic Test Equipment
ATEGG	Advanced Turbine Engine Gas Generator
ATF	Advanced Tactical Fighter
ATK	Attack
AWACS	Airborne Warning and Control System
BLSS	Base Level Self-Sufficiency Spares
BMD	Ballistic Missile Defense
BMEWS	Ballistic Missile Early Warning System
C^3	Command, Control and Communications
CATSS	Cartographic Application for Tactical and Strategic Systems
CIP	Component Improvement Program
COC	Combat Operations Center
COMM	Communications
COMSEC	Communications Security
CONUS	Continental United States
CSOC	Consolidated Space Operations Center
CSRL	Common Strategic Rotary Launcher
CSW	Conventional Standoff Weapon
DACT	Dissimilar Air Combat Training
DCS	Defense Communications System
DEW	Distant Early Warning
DMSP	Defense Meteorological Satellite Program
DOD	Department of Defense
DSCS	Defense Satellite Communications System
DSP	Defense Support Program
DT&E	Development Test and Evaluation
ECCM	Electronic Counter-Countermeasures
ECM	Electronic Countermeasures
EDS	European Distribution System
EHF	Extremely High Frequency
EMDP	Engine Model Derivative Program
EMP	Electro-magnetic Pulse
FLTSATCOM	Fleet Satellite Communications
FY	Fiscal Year
GBU	Guided Bomb Unit
GLCM	Ground Launched Cruise Missile
GPS	Global Positioning System
HARM	High Speed Anti-Radiation Missile
HF	High Frequency
HUD	Heads-Up Display
ICBM	Intercontinental Ballistic Missile
IFF	Identification Friend or Foe
IIR	Imaging Infrared

GLOSSARY (Continued)

I&M	Improvement and Modernization
IOC	Initial Operational Capability
IONDS	Integrated Operational Nuclear Detonations Detection System
IUS	Inertial Upper Stage
JINTACCS	Joint Interoperability of Tactical Command and Control Systems
JSC	Johnson Space Center
JTIDS	Joint Tactical Information Distribution System
LAD	Low Altitude Dispenser
LANTIRN	Low Altitude Navigation and Targeting Infrared System for Night
LGB	Laser Guided Bomb
LLLGB	Low Level Laser Guided Bomb
MANTECH	Manufacturing Technology
MATE	Modular Automatic Test Equipment
MC	Mission Capable
MEECN	Minimum Essential Emergency Communications Network
MGMT	Management
MOU	Memorandum of Understanding
MRASM	Medium Range Air-to-Surface Missile
MSIP	Multi-Staged Improvement Program
MSL	Missile
M-X	Missile X
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NGT	Next Generation Trainer
NUDETS	Nuclear Detonations
OFT	Operational Flight Trainer
OT&E	Operational Test and Evaluation
OTH	Over-the-Horizon
OWRM	Other War Reserve Material
PAM-D	Payload Assist Modules-Delta Class
PLSS	Precision Location Strike System
POS	Peacetime Operating Stock
P^3I	Preplanned Product Improvement
PRAM	Productivity, Reliability, Availability, Maintainability
RAF	Royal Air Force
R&D	Research and Development
RDF	Rapid Deployment Force
RDT&E	Research, Development, Test,and Evaluation
SAC	Strategic Air Command
SACDIN	SAC Digital Network
SAM	Surface-to-Air Missile
SCF	Satellite Control Facility
SDS	Satellite Data System
SHF	Super High Frequency
SLAR	Side Looking Airborne Radar
SLBM	Submarine Launched Ballistic Missile
SRAM	Short Range Attack Missile
STP	Space Test Program
STRAT	Strategic
SYS	System
TAC	Tactical
TAF	Tactical Air Forces
TECH	Technology
Tech Mod	Technology Modernization
TRI-TAC	Joint Tactical Communications Program
TTB	Tanker-Transport-Bomber

UHF	Ultra High Frequency
U.S.	United States
USAF	United States Air Force
VHF	Very High Frequency
VHSIC	Very High Speed Integrated Circuits
VLF/LF	Very Low Frequency/Low Frequency
WRM	War Reserve Material
WRSK	War Readiness Spares Kit
WWMCCS	Worldwide Military Command and Control System

Mr. STRATTON. If there are no other questions, I think that completes the presentation you were going to make today, General, if I am not mistaken?

General BURKE. Yes, sir.

Mr. STRATTON. We will get into other things later on?

General BURKE. Yes, sir. We will be back later in the week to take up strategic C^3, space, and tactical air.

Mr. STRATTON. Thank you very much.

We will adjourn until tomorrow morning at 10 o'clock. We have a full committee meeting at 2:30 this afternoon.

[Whereupon, at 11:50 a.m., the subcommittee was adjourned, to reconvene at 10 a.m. on Wednesday, March 3, 1982.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR FISCAL YEAR 1983—DEPARTMENT OF THE NAVY

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Wednesday, March 3, 1982.

The subcommittee met, pursuant to notice, at 10:45 a.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mrs. HOLT. Our chairman is not here, but he is on his way. I think we should get started. I will read his statement:

This morning the subcommittee's hearings will continue with consideration of procurement of Navy strategic systems.

As the members are aware, the preponderance of the Navy's strategic systems procurement is in the Trident ballistic missile submarine program under the jurisdiction of the Seapower Subcommittee. Other strategic programs under the Seapower Subcommittee's jurisdiction are cruise missile vertical launch systems for surface ships, and the equipping of SSN-668 class attack submarines to launch sea-launched cruise missiles.

The Procurement Subcommittee is responsible for authorizing the procurement of the Navy's Trident ballistic missiles, maintenance of Poseidon ballistic missiles and the Tomahawk antiship and land-attack cruise missiles for use for either strategic or tactical purposes.

There has been some discussion of the Trident II, or D-5, extended-range ballistic missile which is now under development. While no procurement funding for the Trident II missile is requested in fiscal year 1983, this unproved missile may well become an R. & D. issue in the full committee this year and may be considered by this subcommittee for procurement authorization within the next year or two. So the members of this subcommittee should have some familiarity with potentially large programs before they reach the procurement stage, I have asked Navy witnesses to address the Trident II program today.

This afternoon the subcommittee will be considering Air Force and Navy procurement for command, control, communications and intelligence, C³I, programs. These programs have been given the highest priority in fiscal year 1983.

Our first witness today is Rear Adm. S. J. Hostettler, U.S. Navy, Director, Surface Combatant Systems, Office of the Chief of Naval Operations.

Mrs. HOLT. Admiral Hostettler, before proceeding will you please introduce those witnesses who are accompanying you?

I am informed by staff that the testimony you are giving is classified, so under the authority that we received yesterday we will go into executive session.

BIOGRAPHICAL SKETCH OF REAR ADM. STEPHEN J. HOSTETTLER, U.S. NAVY

Rear Admiral Stephen John Hostettler was born in Evansville, Indiana on 23 August 1931. He was graduated from the U.S. Naval Academy with the class of 1953. He was promoted to flag rank in May 1979.

Upon being commissioned, he served two successive tours in Pacific Fleet destroyers. The first was in USS Eversole (DD-789) as First Lieutenant and the second in USS St Clair County (LST-1096) as Executive Officer which was followed by a tour

as Assistant Operations Officer, Staff of Amphibious Operational Training Unit, Pacific.

In January 1961, after two and one-half years of graduate studies at the U.S. Naval Postgraduate School, Monterey, California, he was awarded the degree of Master of Science in Electrical Engineering. He then served in the commissioning crew of USS Lawrence (DDG-4) as Weapons Officer until February 1963. He was then ordered to Staff, Commander Cruiser-Destroyer Force, Atlantic Fleet, for a two-year tour as Guided Missile Officer. Upon completion of the course of instruction at the Armed Forces Staff College in 1965, he was assigned to USS Conyngham (DDG-17) as Executive Officer.

He served in the Bureau of Naval Personnel in the Officer Distribution Division from 1967 to July 1969. Upon graduation from the Program for Management Development, Harvard Business School in January 1970, he assumed command of USS Cochrane (DDG-21) until September 1971. He subsequently was assigned as Surface Operations Officer, Staff Commander Carrier Division Seven from November 1971 through June 1973.

He was a graduate of the Industrial College of the Armed Forces in June 1974. Prior to his assignment to command USS Halsey (CG-23) from March 1977 until May 1979, he served as Director, Medium Range Missile Division (TARTAR/SM-1 missile program office), Headquarters, Naval Sea Systems Command.

From July 1979 to July 1981, Rear Admiral Hostettler served as Commander U.S. Naval Forces, Korea; Commander Naval Component, Military Armistice Commission, Korea. In addition he was assigned duty as Deputy Commander, Naval Component Command, Combined Forces Command, Korea.

In addition to various awards, Rear Admiral Hostettler has been awarded the Bronze Star Medal, Meritorious Service Medal and the Navy and Meritorious Unit Commendations.

Rear Admiral Hostettler is married to the former Lucy Ann Ingalls of Bedford, Indiana, and they have two children, Kathryn and Stephen Jr.

Rear Admiral Hostettler is now Director, Surface Combat Systems Division with the Chief of Naval Operations.

STATEMENT OF REAR ADM. S. J. HOSTETTLER, USN, DIRECTOR, SURFACE COMBATANT SYSTEMS, OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Admiral HOSTETTLER. Thank you very much for the introduction.

I have looked forward to the privilege—my first—of testifying before this committee. I would like to introduce, Rear Adm. Charles Prindle, on my right, who is Deputy Director, Research, Development, Test and Evaluation, Office of the Chief of Naval Operations.

On my left is Rear Adm. Glenwood Clark, U.S. Navy, Director, Strategic Systems Projects, who is prepared to speak to details of the Poseidon program and Trident.

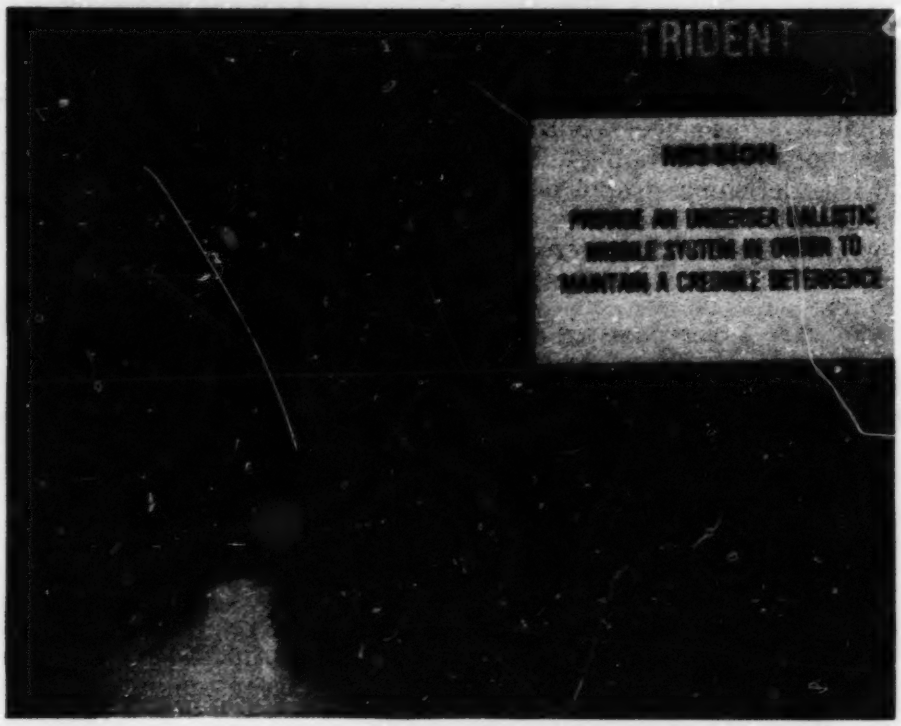
On my far left is Rear Adm. Walter M. Locke, who has addressed the committee before and who is prepared to respond to all questions regarding the long-range cruise missile program.

Immediately to the rear is Rear Adm. Dickinson M. Smith, U.S. Navy, Director, Attack Submarine Division, platform sponsor for both missiles, who is prepared to address any inquiries that may come up in the missile area.

As you are aware, I am here to present the Navy's strategic and long-range cruise missile requirements as presented in the fiscal year 1983 WPN (weapons procurement, Navy) budget request and also those items which require authorization in fiscal year 1984. Those additional items for which your subcommittee has expressed a desire to receive information will be addressed after the WPN portion of the briefing. In fact, Admiral Prindle does have a prepared statement and is prepared to address the R. & D. program aspects, particularly in terms of Trident II.

The first portion of the WPN request provides for procurement of fleet ballistic missiles, check-out equipment, modification of missiles and support and delivery of the sea-based strategic deterrent force.

Poseidon support—while the Poseidon missile is no longer in production, with the last buy in 1974; we are requesting $9.7 million in fiscal year 1983 and $8.8 million in fiscal year 1984 funds for special purpose flight test instrumentation packages, flight testing and support for readiness and evaluation of that service round throughout the service and operational life of that weapon.



Second, Trident I procurement. Trident, as you know, is a [deleted] nautical mile missile, with up to [deleted] independently targetable vehicles, and [deleted] the range of Poseidon, with better accuracy. We plan that missile for both the Trident submarine as well as for 12 Poseidon backfit submarines. We are requesting in 1983, 72 missiles at a price of $699.5 million, and $43.8 million for advance procurement in fiscal year 1983 for the missiles being procured in fiscal year 1984.

TRIDENT I MISSILE

[Dollars in millions]

	Quantity	Price
Fiscal year:		
1982 (appropriated)	72	$906.3
1983 (budget request)	72	742.8
1984 (authorization)	72	786.8

In 1984 we are requesting authorization for 72 missiles, at the cost of $752 million and, again, advance procurement of $33.8 million to support the procurement of missiles in fiscal year 1985.

Third, Poseidon missile modifications, which are required to correct any deficiencies which may result from our operational testing and fleet experience, we are requesting $7.5 million in fiscal year 1983 and $10.1 million under this line heading in fiscal year 1984.

These deficiencies and modifications include, among others, TVC gas generators, to improve the shelf life of these generators, nose cone modification for increased survivability and improved retention mechanism for the first-stage nozzle.

Missile Industrial Facilities

We are requesting moneys in 1983 of $2.6 million and in fiscal year 1984 again $2.6 million. This money is to provide for capital rehabilitation, improvements in repairs at our various facilities, at Sunnyvale; Bacchus and Brigham City, Utah; to provide for our aging equipment support, provide for fire protection in compliance with State and local regulations. That money represents the minimum necessary for compliance with those local laws and regulations.

In the spares area, in fiscal year 1983 we are requesting $1.1 million; in fiscal year 1984, $1.8 million, to maintain the inventory of missiles, ground support of equipment and insure maximum readiness based on our current usage rates. It covers initial spares for Trident and replenishment spares for existing Poseidon missiles as well.

In the area of astronautics, we require funds to maintain an adequate worldwide constellation of navigation satellites. Currently we have five Oscar and one Nova satellites in orbit for the precision navigation for our SSBN's. We are requesting in fiscal year 1983, $12.8 million, and in fiscal year 1984, $11.7 million, which would provide for one dual Nova launch in 1983 and one dual Oscar satellite launch, in fiscal year 1984 if it is needed.

Addressing Tomahawk, I would like to preface my short remarks with the statement that in my view the long-range cruise missile represents the next great breakthrough in naval warfare, both for offensive strikes at other ships, enemy ships, as well as offensive strikes ashore to vital naval targets. It provides for a distributed offensive which allows us to carry the battle to the enemy and thus dilute his capability to execute his own offense. It is my view this is probably the most significant breakthrough we have had in the Navy in recent years.

The Tomahawk is the Navy's long-range cruise missile capable of launch from submarines and surface ships against sea targets as well as land targets. Its range is over 250 miles against sea targets and at land targets up to 1,300 miles, both with conventional and nuclear ordnance in the overland version. The missile has a small cross-section and a low flight profile which would assure its survivability against present and projected enemy defenses.

We are requesting in fiscal year 1983 to procure 120 rounds at a price of $292.2 million. In fiscal year 1984 we are requesting 312 missiles at a price of $600 million.

TOMAHAWK

[Dollars in millions]

	Quantity	Price
Fiscal year:		
1982 (appropriated)	88	$225.2
1983 (budget request)	120	292.2
1984 (authorization)	312	599.0

These missiles will provide for planned installations on both surface ships and submarines and that procurement does match our launch capacity on those vessels.

In summary, the delivery of the weapons authorized and appropriated for fiscal year 1983 will be completed during fiscal year 1985. The inventory status for Trident I is as displayed on this vugraph [deleted]. The procurement objective has been reduced from 969 to 630 rounds because of the forthcoming introduction of the Trident II/D-5 missiles planned for IOC in fiscal year 1989.

The Trident I production is planned to insure that our Trident and Poseidon backfit submarines will have a full tactical loadout.

Tomahawk procurement is a reasonable and prudent plan to meet the tactical loadout requirements on our ships and submarines and then to grow in a proper number to full inventory objectives.

This slide [deleted] shows t' at total inventory objective and the ramp we use to get there. The inventory objective is at the top and you will see the ramp which shows both inventory and tactical loadout just below it it is carefully matched to the tactical loadout requirement in earlier years.

I would now like to pass to Admiral Prindle, who is prepared to make a statement on the R. & D. program aspects in both program areas.

WRITTEN STATEMENT OF REAR ADM. S. J. HOSTETTLER

Mr. Chairman and members of the subcommittee, I am Rear Admiral Stephen J. Hostettler, Director, Surface Combatant Systems Division, Office of the Chief of Naval Operations. It is my privilege to present the strategic and cruise missile requirements for the U.S. Navy contained in the Weapons Procurement, Navy, Appropriation fiscal year 1983 Budget Request and those items which require authorization in fiscal year 1984.

It is important to recall that the mission of the Navy, as set forth in Title 10, U.S. Code, is to be prepared to conduct prompt and sustained combat operations at sea in support of national interests; in effect it demands maritime superiority for the United States and its allies. Specifically, the Navy must be prepared to seek out and destroy enemy naval forces and to suppress enemy sea commerce, gain and maintain general naval supremacy, control sea area and protect vital sea lines of communication, establish and maintain superiority in any area of naval operations, seize and defend advanced naval bases, and conduct land and air operations as may be essential to the prosecution of a naval campaign. These missions can only be "prompt and sustained" when the variety and quantity of required weapons are on hand when called upon to fight.

The inventory objectives which determine procurement requirements for all weapons are continuously reviewed. Their determination is sensitive to estimated enemy order of battle and defensive capabilities; the anticipated scenario; our own demonstrated weapon system capabilities; logistic requirements including weapon distribution to fighting units; and battle attrition on both sides. A logical and systematic evaluation of numerous sensitive parameters, determines inventory requirements which establish minimum prudent ammunition levels rather than absolute ultimate requirements upon which to base our war fighting preparedness. Since inventory objectives are sensitive to a number of variable factors inventory objectives may change and requirements for procurement may vary annually.

Strategic and Cruise missile requirements for fiscal year 1983 are computed on terms of individual weapon requirements as illustrated below:

Trident [deleted].

Tomahawk [deleted].

The procurement requirements contained in this year's request reflect an effort toward achieving the inventory requirements in balance with overall realities.

The Weapons Procurement, Navy appropriation is composed of four budget activities two of which we will address today. These are Activity One which includes procurement of ballistic missiles, and navigation satellite system requirements and Activity Two which includes cruise and other missiles such as air, surface and subsurface launched missiles, communication satellites and aerial targets. The remainder of budget Activity Two will be addressed as a subsequent hearing.

With your permission, Mr. Chairman, I would like to address each of these programs in some detail, in order of budget activity.

BUDGET ACTIVITY I

Ballistic missiles

Budget Activity I provides for the procurement of fleet ballistic missiles, ancillary checkout and support equipment, and the modification and improvement of facilities required to support the delivery of these missiles to the sea-based strategic deterrent forces. Of the $776.5 million requested in fiscal year 1983, $752.5 million is for ballistic missiles; $7.5 million is for missile modifications; and $16.5 million is for support equipment, spare parts, industrial facilities and astronautics.

Poseidon

Poseidon missiles are no longer being procured; however, funding is requested to support missile tests which will continue throughout the operational lives of the weapons. This is necessary in order to continue to evaluate the readiness of deployed missiles in accordance with Joint Chiefs of Staff test criteria. The fiscal year 1983 budget includes funds for special purpose flight test instrumentation components and Department of Defense components delivered to the Department of Energy for Poseidon. The fiscal year 1983 budget includes funds for special purpose flight test instrumentation components and Department of Defense components delivered to the Department of Energy for Poseidon warhead assembly. $9.7 million is requested for Poseidon for fiscal year 1983. For fiscal year 1984, authorization is requested for $8.8 million.

Trident

The Trident program provides an undersea strategic missile system that ensures this country continues to maintain a credible, survivable deterrent which is independent of foreseeable threats throughout the decade and beyond. The portion of the strategic ballistic missile force at sea is the least vulnerable element of our nation's strategic forces. To insure their continued survivability and effectiveness we must expand the SSBN's weapon capabilities beyond those of the current Poseidon. We are, therefore, requesting continued production of the Trident I missile which will be deployed in the Trident submarine, as well as backfitted into twelve of the existing Poseidon fleet ballistic missile submarines. The Trident I missile will carry a full payload with the delivery accuracy of Poseidon, [deleted].

The total fiscal year 1983 request for Trident I missile procurement is $742.8 million. $699.5 million of this total is requested for 72 missiles for the combined Trident and Trident backfit program. The remaining $43.8 million is requested for the advance procurement of various components of the Trident missile in support of future procurements. For fiscal year 1984, a total authorization of $785.8 million is requested for procurement of 72 Trident I missiles ($752.0 million) and for advance procurement for follow-on missile buys ($33.8 million).

Modification of missiles

Missile modifications are determined only after thorough investigation has established the need for a change in system or equipment configuration, the total estimated cost and the impact of a proposed change has been defined and the proposal severely screened to determine a positive advantage to the system. Poseidon modifications are funded only when correction of a known deficiency is required, a component is no longer procurable in its original configuration or it is necessary to accept a substitute part of an existing subassembly. The fiscal year 1983 request for modification of Poseidon missiles is $7.5 million. For fiscal year 1984, authorization is requested for $10.1 million for the Poseidon missile modifications.

Support equipment and facilities

The support funds requested in Budget Activity I are for initial and replenishment spares and repair parts, maintenance of missile industrial facilities and astronautics. The fiscal year 1983 request for support equipment and facilities is $16.5 million. For fiscal year 1984, authorization is requested for $16.1 million for support equipment and facilities.

BUDGET ACTIVITY II

Other missiles

Budget Activity II provides for the procurement, of cruise missiles.

Tomahawk

The Tomahawk cruise missile is a long range missile with land attack and antiship models, sized to fit submarine torpedo tubes as well as surface ship and aircraft launchers and capable of being deployed from a variety of subsurface and surface platforms. The Tomahawk cruise missile is propelled in flight by a small turbofan engine. The antiship version uses a modified Harpoon guidance system and the land attack version has inertial and terrain contour matching guidance system. The antiship version is fitted with a high explosive warhead while the land attack version can be fitted with either the high explosive or a nuclear warhead. The Defense System Acquisition Review Council (DSARC II) was completed for Tomahawk in January 1977, and the Secretary of Defense approved the weapon entering into full scale engineering development for both the land attack and anti-ship models.

$292.2 million is request for fiscal year 1983 to fund the procurement of 120 Tomahawk missiles. Authorization for 312 of $600.0 million for 312 missiles is requested for fiscal year 1984.

SUMMARY

In summarizing the programs presented today it is appropriate to put the fiscal year 1983 procurement profile into perspective. The delivery of munitions authorized and appropriated for fiscal year 1983 will not be completed until the end of the Funded Delivery Period (FDP) in fiscal year 1985. The period of time required for contracting, material procurement, manufacturing and delivery for items in this budget request will require approximately twenty-four months exclusive of advance procurement materials.

A composite for Trident I and Tomahawk missiles are displayed below:

Weapon	Inventory objective	January 1982 inventory	Percent I.O.	Fiscal year 1983 procurement	Projected inventory end of fiscal year 1983 FDP	Percent of I.O.
Trident [1]						
Tomahawk [1]						

[1] Information deleted.

The Trident I inventory objective has been reduced with the forthcoming introduction of the D-5 missile. With the procurements of fiscal years 1983, 1984, 1985 and prior years [deleted].

While this fiscal year's procurement of Tomahawk only contributes about eight percent of the inventory objective, it is a reasonable and prudent plan for a weapon that is in its early years procurement. By the end of the five year defense plan (FYDP) the inventory will rapidly grow to over [deleted] contributing significantly to filling the launch systems projected to be available at that time.

Mr. Chairman, that completes my statement of the fiscal year 1983 Budget Request for strategic and cruise missiles within the Weapons Procurement, Navy, Appropriation.

Rear Admiral Prindle will provide at this time a research and development overview for your information. We will be happy then to answer any questions you or the members of the subcommittee might have.

STATEMENT OF REAR ADM. CHARLES O. PRINDLE, USN, DEPUTY DIRECTOR, RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, OFFICE OF CHIEF OF NAVAL OPERATIONS, DEPARTMENT OF THE NAVY

Admiral PRINDLE. Mr. Chairman and members of the committee, it is my pleasure to be here to represent the Navy's R. & D. before the subcommittee.

With your permission, Mr. Chairman, I would like to enter my statement into the record in the interest of time and then stand by to answer any questions in the general area of research and development or specific R. & D. questions that are related to the weapon systems under discussion today.

Mr. STRATTON [presiding]. Without objection, that will be approved.

WRITTEN STATEMENT OF REAR ADM. CHARLES O. PRINDLE

Mr. Chairman, members of the subcommittee, it is a pleasure to have the opportunity to discuss the Navy Research and Development program today.

The fiscal year 1983 Budget request for RDT&E, Navy is $6,232,300,000. This is an increase of $425M or 7.3 percent over the fiscal year 1982 budget. Thus RDT&E Navy is essentially level funded in real terms between fiscal year 1982 and fiscal year 1983.

A more detailed breakdown of key aspects of RDT&E is as follows:

[Dollars in millions]

	Fiscal year—		Increase	Percent
	1982	1983		
Technology base (6.1/6.2)	$770	$853	$+83	+10.8
Support (6.5)	558	602	+44	+7.9
Development programs (6.3/6.4/6.5)	4,479	4,777	+298	+6.7
Total	5,807	6,232	+425	+7.3

In developing the Navy Research & Development budget for fiscal year 1983, we emphasized the following "good management" factors: Affordability (reducing number of programs); prioritization of programs; full-funding and sound program structure; taking reductions by vertical cuts; better cost estimating; and discipline in "new starts."

I believe that this approach has resulted in a sound, well-balanced program for Navy Research and Development. The following table subdivides this program into the Budget Activities by which the Budget is displayed to Congress. As you can see, Tactical Programs comprise nearly 60 percent of our total effort. This area contains the heart of the Navy mission, our Air, Surface, Subsurface, and Land (Marine) Warfare components. The Research and Development for most of the weapons systems considered by this subcommittee is funded in this Budget Activity. The very important area of Research and Exploratory Development (the Technology Base) is a considerably smaller second with 13 percent of the program. The remaining one quarter or so (27 percent) of our program is devoted to strategic programs such as Trident and to the Command, Control, Communications and Intelligence Area and Support Programs.

Department of the Navy—Fiscal year 1983 R.D.T. & E. program

Budget activities:	*Millions*
Technology base	$853.4
Advanced technology development	165.1
Strategic programs	669.0
Tactical programs	3,678.1

Intelligence and communications	247.8
Defensewide mission support	618.9
Total research development test and evaluation, Navy	6,232.3

At this time, I will address, in more detail, a few programs in which the committee has expressed particular interest.

TRIDENT II

Concept formulation effort started in fiscal year 1978 on a Trident II missile with greater range/payload capability and improved accuracy over that available with the Trident I (C-4) missile. The Trident II missile will be carried on Trident Fleet Ballistic Missile Submarines, this ensuring that the United States will continue to maintain a highly survivable strategic deterrent for the 1990's and beyond. The Deputy Secretary of Defense, in his Program Decision Memorandum of 2 October 1981, directed the Navy to fund the development of the D-5 missile. The advanced development missile will be designed to be carried and launched from the Trident submarine; however, modifications may be required to some ship subsystems to accommodate this large missile. Efforts will commence in fiscal year 1982 to identify the necessary changes to these subsystems.

Concept formulation effort continued through fiscal year 1980. The Trident II (D-5) Advanced Development Program was initiated in fiscal year 1981. The fiscal year 1982 Program continued the Advanced Development Program, including consideration of options which increase payload, enhanced range, significantly improved accuracy over that of the currently deployed Trident I (C-4) missile.

In fiscal year 1983, the Navy will continue the Trident II (D-5) Advanced Development Program to completion with an end of fiscal year 1983 Defense Systems Acquisition Review Council Milestone II decision to select a weapon system option to proceed into full-scale engineering development in fiscal year 1984. We expected to complete fabrication and testing of the Geodetic/Geophysical satellite, a radar altimeter satellite designed to collect gravity and other geodetic data in support of the Trident II (D-5) error reduction effort. Efforts to identify necessary subsystem changes to incorporate an advanced missile in the Trident submarine baseline will be carried out.

TOMAHAWK

We are building the Tomahawk land attack cruise missile (TLAM) with a very low flight profile and with a great circle range of at least 1300 nautical miles. Using the same technological approach, a Tomahawk anti-ship cruise missile (TASM) with a 1000-pound warhead and an operational range of 300 nautical miles is also being developed. Designed for launch from submarine torpedo tubes, these missiles also can be deployed from air, surface, subsurface, and land platforms. Their small size and low flight profile render them survivable against current and projected enemy defenses. By providing significant new capabilities, these missiles will broaden and diversify our forces with increased firepower and standoff range.

In fiscal year 1982, we will achieve initial operational capability for the submarine-launched Tomahawk anti-ship and the Tomahawk land-attack (conventional) missiles. We will continue development of the surface ship Common Weapons Control System and continue production of Tomahawk cruise missiles and launchers. We will conduct developmental Test/Operational Test and Operational Evaluation of the surface ship-launched anti-ship and conventional land-attack missiles and the submarine-launched land-attack missiles (both conventional and nuclear).

In fiscal year 1983, we will complete Operational Test and Evaluation for the submarine-launched nuclear land-attack Tomahawk. Conduct development testing/operational testing and operational evaluation for surface ship conventional land-attack and nuclear land-attack Tomahawk. Initial operational capability for surface ship conventional land-attack and anti-ship missiles will be achieved in fiscal year 1983 with the Initial Operational Capability for the submarine and ship-launched nuclear land-attack missile taking place in fiscal year 1984.

STANDARD MISSILE 2 (N)

This program will provide the Standard Missile 2 with nuclear capability for the Standard/Terrier System and also for the Standard/Aegis and Standard/Tartar Systems. The nuclear capability is intended to improve missile effectiveness, and provide an assured defensive capability against advanced threat missiles. The approach for the nuclear warhead and fuzing developments will be an integral nuclear ord-

nance section configured for use with both extended range and medium range versions of the Standard Missile, completely alternate and interchangeable with the conventional ordnance section.

Department of Energy/Department of Defense Phase I concept and Phase II feasibility studies were completed prior to 1975, and Phase II Engineering Development initiated in 1977. The program was not funded in fiscal year 1980. In fiscal year 1981, the program was reinstated by the Office of the Secretary of Defense, and restructured in schedule and funding profile. The fiscal year 1982 and fiscal year 1983 funds will continue the Target Detecting Device development, continue procurement of missiles for the flight test program, and continue nuclear safety studies and battle group anti-air warfare coordination studies. In addition, preparations for shipboard integration will begin.

Mr. Chairman, this brief overview has been intended only to provide an idea of the organization and content of the fiscal year 1983 program for RDT&E, Navy. I will be glad to answer any questions you or the members of the Subcommittee may have at this time.

Thank you.

Mr. STRATTON. You are going to outline these, yourself? I am not sure that we are prepared to ask questions on the R. & D. aspects until you have presented it to us.

Mr. KLEIN. Could I make a statement?

Mr. STRATTON. Mr. Klein.

Mr. KLEIN. Mr. Chairman, the Trident D–5 missile was an issue in the full committee. The Research and Development Subcommittee proposed to kill the D–5. This year, since this program is a large program and may be controversial, and, second, it may be before this subcommittee within a year or two for procurement, I thought it would be well if we could have the witnesses address that program today, even though there is no procurement money requested for it. It is an important program.

Mr. STRATTON. I pointed that out in the statement that Mrs. Holt so ably read in my absence.

Can you address the Trident D–5 status, Admiral?

Admiral PRINDLE. Yes, sir, from an R. & D. standpoint, I certainly will.

I will begin by discussing the relationship of our strategic and tactical programs in the R. & D. budget for fiscal year 1983 by stating that the impact of Trident II is noticeable in the percentage of R. & D. committed to strategic programs as compared to the tactical programs. That percentage is 10.7 percent of R. & D. for strategic programs in 1983, which represents a growth of some 26-plus percent in strategic programs over the fiscal year 1982 program.

As far as impact on the tactical programs is concerned, that is exemplified by the fact that in fiscal year 1983, 59 percent of our R. & D. budget is directed toward tactical programs, as compared to 61 percent in the previous year.

What does this mean for our tactical programs? I think that is an important consideration. I will say this: The Navy R. & D. community has taken an entirely new thrust in the business of prioritizing our programs and getting on with those which are of greatest priority. This was the result of an understanding or realization that over the past 10 years we have witnessed a growth of about 89 percent in the number of R. & D. acquisition-type programs that the Navy is pursuing. During this time the resources available to us to conduct R. & D. have sharply diminished.

In terms of manpower, those individuals who are involved in the management and support of R. & D. have experienced a 29-percent

decrease in the number of personnel. Likewise, in the area of funding we have seen something less than 2-percent growth over that same period.

Basically, we are spreading too many R. & D. dollars over too many programs.

The approach which has been taken in the fiscal year 1983 R. & D. program is to undertake a very rigorous prioritization of everything that we have to do in terms of R. & D. and to cut those things with lower priority. That amounts to some 40 or more programs which have, in fact, been vertically cut and done away with in the fiscal year 1983 program. This then will permit us to fully fund those things which are of highest priority.

Of course, the D-5 falls in that category; it is considered to be one of our highest priority programs.

Mr. STRATTON. I think what we are trying to find out, Admiral, is where the program stands now with respect to the problems that you face and when you are likely to solve them, as Mr. Klein pointed out.

If this goes along rapidly, then there may well be a request that we put some money in for procurement of Trident II in the fiscal 1983 budget which will not go into operation, of course, until the 1st of October, so I think we are not so particularly concerned about what proportion of your R. & D. program is tied up in Trident.

What we want to know is where it stands now. The Secretary directed you to initiate this program in October of last year and it is presumably a top priority. Are you going to be in a position to reach a production decision before the 1st of October? I think that is the question we want answered.

Mrs. HOLT. Mr. Chairman, could I throw in another thought right along that same line?

I don't understand why we can't have a D-5 right away and save all those years of inflation?

Why can't we move that up and get it into production right away?

Admiral PRINDLE. May I ask that Admiral Clark address the technical details?

Admiral CLARK. The basic objectives of what is referred to here as the SLBM modernization program or perhaps better known as D-5, or Trident II.

The objectives of that program are to have range, missile footprint and throw weight improvement. This means more reentry bodies, for example, on the front end of the missile, and accuracy improvement, for which the goal at the present time is [deleted] at a range of 4,000 miles, an initial operating capability, IOC, date at the end of calendar year 1989.

The dominant objective of the program is accuracy improvement.

Mr. BADHAM. If I may stop you right there, Admiral—your accuracy improvement down to [deleted] seems to be extremely ambitious. That is using satellite navigation and all of that?

Admiral CLARK. No, sir; it is not.

Mr. BADHAM. Is it another—and pardon my way of putting it—but another outlandish goal like roll rate on the F-18, that it sounds great on paper and then if you can't make it—and nothing

has ever made it before—then the Navy gets criticism and we get criticism heaped on you and on us because you have a goal and you can't meet it? What are your chances of getting to a [deleted] CEP [deleted] 4,000 nautical miles?

Admiral CLARK. Since 1975 we have had an improved accuracy program, an accuracy technology program. On that program we have spent considerable resources in understanding how accuracy improvement might be achieved in an SLBM system such as Trident II. We have had very good success in that, to the point of actually demonstrating in the laboratory the various components in the weapon systems that are critical to weapon system accuracy improvement.

For example, in the Trident I weapon system the accuracy at 4,000 miles based on actual demonstrated flights is about [deleted]. That is about [deleted] than the goal for Trident I which was [deleted] at 4,000 miles.

Mr. BADHAM. That is why we have the Trident II under development, but from [deleted]?

Admiral CLARK. I would not disagree that that is certainly very much of a technical challenge. With the improved accuracy program technology behind us, we feel that certainly a significant accuracy improvement in the Trident II system in the [deleted] range is achievable in the program we have laid out.

Mrs. HOLT. Have we achieved that?

Admiral CLARK. We are not far enough along in this program to achieve it. We have not built the Trident II missile yet.

Mr. HILLIS. If you are able to achieve this degree of accuracy, will it permit you [deleted].

Admiral CLARK. Very much so. A combination of this [deleted], that is, [deleted] than we carry on Trident I, will give you very definite [deleted] capability.

Mr. HILLIS. How many warheads will Trident II have?

Admiral CLARK. I have shown on this chart [deleted] three different possible configurations of the D–5 system that are currently under consideration. With this version right here [indicating], we can either carry [deleted] warheads, which is the warhead we carry now on Trident I, or carry [deleted] warheads.

On these two versions where we have more room on the equipment section or the bus, as we call it, it would be possible to put [deleted]. That would apply to both of these.

The difference in these two versions right here [indicating] is not in the payload but in the ability to footprint the warheads, put the reentry bodies over a larger area from any given missile. The ranges that these warheads could be carried to is indicated here.

Right now we estimate that the range with these payloads would be somewhere in the range of [deleted] for this version, [deleted] to take care of the [deleted], and for these two so-called clear deck versions [deleted] here, [deleted] for this version, and [deleted].

The reason we are showing ranges of missile range at the present time is because we are in the very early stages of the Trident II program. We are not anywhere near going into production on this system.

Mr. BADHAM. What does the expression clear deck mean?

Admiral CLARK. That means the top of the equipment section is clear; it does not have any [deleted], as we have in this case here [indicating]. This dotted line represents a [deleted]. That is what accounts for the differences in maximum payload capability.

SLBM MODERNIZATION BASELINE PROGRAM

Right now we are studying those different configurations.

This is a rather broad overview of the schedule of the Trident II program as it now stands. We began advanced development at the beginning of fiscal year 1981. We plan to have an approximately 3-year advanced development program. During this period of time we will be pursuing the technologies that are relevant to achieving the performance, particularly the range and the accuracy, as indicated. At about the end of fiscal year [deleted] and gotten a decision, we will go into full-scale engineering development with an initial operational capability, IOC, date at the end of calendar year 1989.

Now, just to give you a few more details on that schedule, the configuration selection as to which missile we will actually develop of the three I have indicated, a projection of the specific range goals of the program and specific accuracy goal would be identified during the fiscal year 1983 period prior to going into the full-scale engineering and development period.

The first flight test is scheduled right now for about [deleted]. The flight test program would include development missiles from the Cape Canaveral area and then [deleted] development missiles flown and launched from submarines, then outloaded and the IOC.

Mrs. HOLT. That is why I was trying to ask, why does it take so long? We have been talking about it since 1974.

Admiral CLARK. We have been talking about it for a long period of time, but we have not been spending money on it until recently.

Mrs. HOLT. Is that the problem with spending money on research and development?

Admiral CLARK. The development started in this period right here [indicating], in fiscal year 1981. Prior to that there was, I think, about $5 million to $10 million in each of the preceding 2 or 3 years—I don't recall exactly—to study concepts; but the decision to go ahead in the Defense Department did not occur until March of 1980.

Mrs. HOLT. How could we move it up; spend more money?

Admiral CLARK. We are presently doing a study to see to what extent we can accelerate the IOC and what the implications of that would be both with regard to funding profile as well as any compromises that might have to be made on the performance of the system. That study will be completed this month and will be briefed to the Secretary of the Navy this month.

Mr. STRATTON. It seems to me, Admiral, that is a very important point. This is the point we made yesterday to the Air Force. We fought World War II in 4 years. Here you are with a missile that is supposed to be absolutely vital and you would not have before 7 years. You are not even going to be talking about missile production until [deleted].

It seems to me that this is just unacceptable. How long are the Russians going to wait for us to develop this before they produce

three or four more missiles of their own that make [deleted] miles look like nothing?

It seems to me that we need to get a little sense of urgency in the military over in the Pentagon, because I personally don't think that we have that much time to wait if we are going to be cutting our defense this year, and you are not thinking about producing a missile for some 7 years. They are not going to be really deterred by us. We are operating on a sort of leisurely schedule. What would happen if you put these people on a three-shift basis? Who is the contractor for this?

Admiral CLARK. It is feasible to accelerate the missile development program and that is why we are looking at it right now for precisely the reasons you indicated. This program was originally laid out without that sense of urgency you just stated. It is being studied right now. Again, we are reporting to the Secretary of the Navy this month.

Mr. STRATTON. I think that is what we need to have now before us because we are concerned whether this is going to impact on procurement. We want to try to get geared up in case we have to put some money in for that purpose.

Admiral CLARK. It certainly will involve additional resources beginning in fiscal 1983 and if the program is accelerated to the full extent I think is possible, there will probably be some procurement accounts that come in in 1983 as well.

Mr. STRATTON. Who is the contractor?

Admiral CLARK. There are a number of contractors on the total weapon system: Lockheed on missiles, Charles Stark Draper Laboratory on guidance system design supported by four subcontractors: Singer, Hughes, Raytheon, and G.E.; G.E. for fire-control systems, Sperry for navigation systems, and Westinghouse for launcher. Those are the contractors for the major parts of the weapon system.

Mr. STRATTON. Trident I is out of development and that is in production; is that right?

Admiral CLARK. Yes, sir.

Mr. STRATTON. Are we spending any money on R. & D. there at all?

Admiral CLARK. The only money we are spending on R. & D. for Trident I relates to that Mark 500 reentry vehicle which is a vehicle we developed as a hedge against possible quick deployment in the event that [deleted] system in a much broader sense than they have right now.

Mrs. HOLT. What is the warhead that we are building?

Admiral CLARK. In the D–5?

Mrs. HOLT. Yes.

Admiral CLARK. We have not made that decision on the present program. That decision will be made at the end of this fiscal year on this schedule. If we accelerate the program, we will make that decision rather quickly. The major candidates are the Mark 4 [deleted] warhead, the Mark 12A, which is currently used in Minuteman III, [deleted] and there is the possibility of a new one, which is being studied at the present time.

Mrs. HOLT. What would that [deleted]?

Admiral CLARK. With the accuracy of [deleted] it has a [deleted] probability. I don't have the actual data with me. I can provide it for the record, but it does provide a substantial kill.

Mr. BADHAM. Will you go back to the previous chart? In making the configuration design decision, you are really talking in the area of maximum of [deleted]. In that range, [deleted], where are you talking about as far as locating our submarines?

Admiral CLARK. The D–5 at the present time would be [deleted] then as more D–5's come off line they would [deleted], so you would have deployment in both oceans.

Mr. BADHAM. Eventually, yes, but in rough terms the difference between [deleted] how close to the [deleted] does that put us as far as shooting sanctuaries are concerned?

Admiral CLARK. [Deleted.]

Mr. BADHAM. [Deleted.]

Admiral CLARK. [Deleted] is not that far. The range, of course, is [deleted]. The range above [deleted] is much more important [deleted].

Mr. STRATTON. Mr. Mavroules?

Mr. MAVROULES. While we are talking about R. & D. for fiscal years 1983 and 1984, perhaps production in the late 1980's, will you tell the committee what our present capabilities are relative to a deterrent force, a tactical force, what guarantees do we have for the national security of this country in the event that we have a conflict with what we presently have today?

Admiral SMITH. Would you repeat the question?

Mr. MAVROULES. I will repeat the question. Think about it for a moment. I can follow the chairman's thinking on this as to maybe there should be more money up front for procurement, R. & D., and so forth, to expedite the entire program. I am not one to take a view that we are desperate at this point. What capabilities do we have presently today in the event that we have an international conflict, what can we do with what we have today, presently in our weaponry?

Admiral CLARK. I can certainly speak to the SLBM force. The present SLBM force is [deleted]. Certainly it is capable of covering a large fraction of that target base in the U.S.S.R., [deleted] of it, probably. What we do not have in the present SLBM force is [deleted]. That is one of the principal functions of the D–5 system, to give the SLBM force a [deleted] which were just referred to.

Certainly in terms of [deleted] we have substantial capability.

Mr. MAVROULES. We realize these in the late 1980's, perhaps 1990. What capability would we have at that point?

Admiral CLARK. As the D–5 would phase into the force, you would maintain the capability that we have right now [deleted] and then gradually build up, as these D–5 missiles and submarines come on line, [deleted]. The present plan at least is that they would come on line relatively fast, so that the entire force would consist of D–5 missiles.

In that force some missiles would be [deleted] and the remainder then would be [deleted].

Mr. MAVROULES. Let me continue this, because we do get intelligence reports and sometimes we simply do not get the answers. I appreciated your candor, by the way. I really do.

What degree of deterrence do we have now relative to an attack by the Soviet Union in relation to knocking out our submarines? What kind of accuracy percentage do they have at this point to knock out our submarines?

Admiral SMITH. Ballistic submarines that are at sea, we consider an invulnerable part of the Triad.

Mr. MAVROULES. You consider them safe?

Admiral SMITH. Yes.

Admiral HOSTETTLER. Not only do we consider them safe, we don't see honestly anything in the near term that will change that picture at the present time.

Mr. STRATTON. Mr. McCurdy.

Mr. McCurdy. Thank you, Mr. Chairman.

Gentlemen, I apologize for getting here a little late. There is a Readiness Subcommittee hearing going on at the same time.

Can you put your charts back up? The quantities are 72 per year for Trident I?

Admiral HOSTETTLER. Yes, through 1985, the last year as planned, with 30 in the 1985 year.

Mr. MCCURDY. Can you tell me the reason for the apparent dip between two, three, and four there? You are producing the same quantity and you have different costs per year, more in 1982, less in 1983, and more in 1984. What is the reason for that cycle or oscillation?

Admiral HOSTETTLER. One, the advance procurement numbers that go into the line and, second, the 1982 line is an increase, if you will, as a result of a decision to cut back on the total numbers produced initially.

Mr. MCCURDY. If you have advance moneys in 1982, that is understandable. What is the difference between 1983 and 1984? Are you calculating inflation there; is that the $44 million difference? What is that attributable to?

Admiral HOSTETTLER. Primarily it is advance procurement. I can give you the details for the record. The biggest thing is that the 1982 line was the last large amount of advance procurement dollars. The advance procurement dollars in the 1983 and 1984 line are significanly less. I have those numbers here and I can provide those for the record.

[The following information was received for the record:]

NAVY STRATEGIC SYSTEMS—TRIDENT I MISSILE

This apparent anomoly is best explained by examining the P-1 line distribution of the total Trident I funding requirement:

[Dollars in millions]

P-1	Fiscal year		
	1982	1983	1984
(Quantity)	(72)	(72)	(72)
Trident I full funding	$665.0	$699.5	$753.0
(Reentry body shells) (quantity/cost)	(421/$29.8)	(109/$15 1)	(300/$27.4)
Trident I advance procurement	$241.3	$43.3	$33.8
Total program funding	$906.3	$742.8	$786.8

The Full-Funding amounts relate directly to the 72 missiles being procured in each particular year. The estimates reflected here indicate a relatively constant level. The growth pattern in fiscal year 1983 and fiscal year 1984 results mainly from the overall effects of inflation altered somewhat by the variation in required quantities of some missile sub-components. For example, MK-4 Reentry Body Shell requirements are 421 in fiscal year 1982, 109 in fiscal year 1983 and 300 in fiscal year 1984. The Advance Procurement requirements are estimated based on total inventory objective requirements. The amount requested in fiscal year 1982 was developed based on an inventory objective of [deleted] missiles. As a result of the decision to proceed with the development and production of the TRIDENT II missile, TRIDENT I total inventory objective requirements have been reduced to [deleted] missiles. It is this change which results in the significant Advance Procurement reductions in fiscal year 1983 and fiscal year 1984 resulting in the confusing funding profile at the total program level.

Mr. MCCURDY. I would like to get these. If we can go to the Tomahawk for a second, you show the same trend there. On the Tomahawk you are jumping from 88 to 120 and 312. With each change the per-unit cost is still increasing substantially. Again, what are you attributing that to?

Admiral HOSTETTLER. The per-unit cost in fact is dropping. For example, in 1982 we are talking, I believe, of a $2.7 million program cost, $2.6 million in 1983 and, I believe, the 1984 number is $2 million, as we increase the total buy with a new inventory objective, the average cost of the program is close to $2 million.

Mr. MCCURDY. This program has potential to be multiyear?

Admiral LOCKE. Not at this time.

Mr. MCCURDY. Do you believe it is substantial in multiyear?

Admiral LOCKE. Possibly. There are other ways to achieve the same thing and that is to use the capital incentive approach to it. The difficulties with the multiyear approach are, one, the requirements have been changing, a dramatic change since last year. Two, we stress competition in the buy between the contractors, varying depending on the contractor's approach. So, the capital incentive approach for this type of program pays off more than the multiyear approach.

Mr. MCCURDY. Have you submitted your data for the latest SAR to the Secretary?

Admiral LOCKE. Yes, sir.

Mr. MCCURDY. Do you have that data with you, by any chance?

Admiral LOCKE. I don't have all of it, but I have some data——

Mr. MCCURDY. Mr. Chairman, I am informed by the staff that we do not have the December SAR. It is not available to the Congress. Here we are in March and we don't have the most recent data which is already 2 months out of date.

Mr. STRATTON. Admiral Clark, who is in charge of the SAR? Are you responsible for that?

Admiral HOSTETTLER. No, sir, but I want to apologize for two things: One, the appropriate budget backup material did not arrive, which I didn't know until I got here, so I apologize for that, Mr. Chairman.

The issue on the SAR, why it has not arrived, I do not know, but I will take that question back.

Mr. STRATTON. I think this is very important because we appointed a panel here last year, of which Mr. McCurdy was the chairman, to try to take a look at why we are having overruns, why we do nothing about them, why we don't have the information.

One of the arguments we were given by the Defense Department is that you have all the material in the SAR already; you don't need anything more. The SAR was supposed to be available in December, and we don't have it now.

Mr. MCCURDY. It is based on December figures, but it should be coming here and we should have had it.

Admiral HOSTETTLER. As a matter of fact, it sits in OSD being printed. That is not an answer to your question.

Admiral LOCKE. One of the causes for the delay, from my point of view as creator of part of the SAR, was the change in the inflation rates. That did cause us to resubmit.

Mr. STRATTON. Unless we get these things periodically when they are supposed to come here, they do us no good. That is the point Mr. McCurdy made in his report. If we get the SAR's 3 months after the data are applicable, you are really concealing the necessary information.

We have one Cabinet officer who has been cited by the appropriate committee for contempt of Congress in not supplying data that that committee wants. I would not want to have to get into that kind of thing here. I think, Admiral Hostettler, you are the senior admiral here—and, incidentally, why don't we see any commodores? Haven't they been frocked yet? We see a lot of new admirals but a lot of people must have been able to jump over that hoop which the Navy reluctantly complied with in adding commodores.

I think, if you are the senior admiral, I would like to see the SAR's over here tomorrow. I think we ought to have it available. If it has not been printed up, let us get the notes on it.

Admiral HOSTETTLER. All right, sir. I understand.

Mr. MCCURDY. Explain the chart here.

COST TRACK—NUNN AMENDMENT REPORT

	Mar. 31 SAR	Current estimate	Percent change
Program unit cost	4.241	[1] 2.629	[1] –.38
Fiscal year 1982 procurement	3.452	3.452	0

[1] Results from amortizing $1,000,000,000 in R. & D. over 4,000 missiles vice 750.

UPDATED NUNN AMENDMENT STATUS

The chart I showed depicts the Nunn Amendment status as of the date the report was due—7 January 1982. This second chart depicts the Nunn Amendment status of the Tomahawk program as reflected in the final fiscal year 1983 President's Budget to Congress. The information in this second chart will be reported formally at the next quarterly update, as required by the Nunn Amendment.

COST TRACK—NUNN AMENDMENT REPORT

	Mar. 31 SAR	Current estimate	Percent change
Program unit cost	4.241	[1] 3.087	[1] −27.2
Fiscal year 1982 procurement cost	3.452	3.452	0

[1] Results from amortizing $1,000,000,000 in R. & D. over 4,000 missiles vice 750.

Admiral LOCKE. This is the Tomahawk. It is a sea launched, which is both surface ship and submarine, so there is a dramatic drop since the March 31 SAR. The program unit cost shows a drop of 38 percent. This is the total program and not the flyaway cost.

The dramatic drop is primarily due to the increased buy, which is noted on the bottom. In other words, we have gone up to almost [deleted] missiles from the fiscal year 1982 program of about [deleted] missiles.

Mr. MCCURDY. Give me those two figures again. What was the 1982 buy?

Admiral LOCKE. The 1982 was planned on [deleted] including spares.

Mr. MCCURDY. And 1983 is what?

Admiral LOCKE. [Deleted.]

Mr. MCCURDY. That is the reason for the per unit decline?

Admiral LOCKE. That is the primary reason for it. We also have taken other steps to control the cost. I am prepared to talk to these, if you desire. Especially in the guidance area. In other areas it will be a few years before we see the results. Those areas concern the system integrator and the airframe contractor.

Mr. MCCURDY. How have you found the development there in the Tomahawk and ALCM, have you found it has been satisfactory?

Admiral LOCKE. First off, Boeing does the air-launched cruise missile.

Mr. MCCURDY. That is right. We were at both Boeing and GD and looked at both of them to get a comparison. You found GD performs——

Admiral LOCKE. Generally, satisfactory. I am always after them for details, but the performance is generally satisfactory.

Mr. MCCURDY. The Nunn amendment report is triggered by a percentage cost growth. Why was this triggered?

Admiral LOCKE. This was not triggered. You are asking for the status. This is the only data I have on the SAR available with me.

Mr. MCCURDY. Do you have that on the Trident?

Admiral CLARK. In the Nunn amendment there is an increase in unit cost of 36 percent. I would like to talk about that a little bit.

TRIDENT I (C-4) MISSILE

PROGRAM ACQUISITION UNIT COST =	RDT & E ($)	+	WPN ($) FOR TRIDENT SSBN MISSILES ONLY*	
	RDT&E MISSILES	+	WPN FUNDED TRIDENT SSBN MISSILES ONLY*	
31 MAR 81 BASELINE $17.855				
PROGRAM ACQUISITION UNIT COST =	$3554.0	+	$7802.0	
	25	+	611	
CURRENT ESTIMATE $24.332				
PROGRAM ACQUISITION UNIT COST =	$3554.0	+	$4402.5	
	25	+	302	
CHANGE ($) +$6.477				
(%) +36.28%				

* EXCLUDES WPN ($) + MISSILES FOR C-4 BACKFIT PROGRAM

This is the way we have been told to compute the program unit cost for the purpose of reporting under the Nunn amendment. You take the total R. & D. cost of the weapon system. You take the WPN cost for the Trident—for the Trident missile used on the Trident submarines only, recognizing we are building Trident missiles to put on the Poseidon backfit—divide that by the total number of RDT&E missiles as well as the number of missiles, tactical missiles, funded under WPN, and using this computation then these are the actual numbers that apply to the March 31, 1981 SAR.

These are the actual numbers that apply to the current SAR. You can see that the total number of missiles that we are going to procure goes down. The reason for that is the decision to go ahead with the development of the D–5 missile. The difference is the number of missiles you don't have to buy because of the decision to introduce the D–5.

When you go through this kind of arithmetic, you get an increase of 36 percent, even though the actual cost to buy a missile in fiscal year 1982 didn't change.

Mr. McCURDY. You have made an overall decision on the total quantity which is affecting the per-unit cost?

Admiral CLARK. That is correct. The total cost has been computed on this kind of basis.

Mr. McCURDY. I don't have any problems as long as we are using the same arithmetic; as long as we are talking about the same numbers and we have a base to work from, then I don't argue.

I understand when you are starting there may be a variance at first, but once we are talking the same numbers, then we should be communicating. That is all we are trying to do.

How much of a change was there from the total quantity down to now, how much of a quantity change has there been? You were going to have [deleted] missiles. Now you decide, because you are going to D–5, you are down to a lower number?

Admiral CLARK. The inventory objective for Trident I, when you consider all the requirements for Trident submarines as well as the backlift submarines, is [deleted]. The D-5 decision reduced that to [deleted] so we dropped out [deleted] missiles. When you treat it this way you get a 15-percent increase in the program unit cost because you now include the backfit missiles here and you are operating from a larger base of missiles.

Mr. MCCURDY. That is your calculation?

Admiral CLARK. That is another way to do it. The Nunn amendment report did the other one, because we were told to do it that way.

Mr. MCCURDY. You still have a 15-percent increase?

Admiral CLARK. Except that it did not increase the cost to produce the missile. It is strictly an aberration.

Mr. MCCURDY. You talk about aberrations, but you are still talking about an increase in cost when you talk about reducing overall quantity?

Admiral CLARK. We are talking about a reduction in total program cost.

Mr. MCCURDY. Which influences cost growth to a certain degree.

We have been hearing from you for years that when you have scheduled changes there is a resulting cost growth. I agree with that. What you are saying here is, because of a scheduling there is going to be a certain percentage cost growth?

Admiral CLARK. I wouldn't agree with that statement.

Mr. MCCURDY. Will you explain it?

Admiral CLARK. I would not define that as cost growth.

Mr. MCCURDY. There is a cost variance?

Admiral CLARK. The total program has been reduced in cost. In fact, if you compare the fiscal 1982 procurement price for the Trident I missile, the price to procure the missile actually went down.

Mr. STRATTON. What has happened is that you have fewer missiles, so when you divide that into the cost you get a larger unit cost?

Admiral CLARK. That is right, depending on whether you count all the missiles or a fraction of the missiles, you get a different number.

Mr. MCCURDY. You could argue that you have had a $3 billion saving?

Admiral CLARK. $3.7 billion reduction in the total program.

Mr. MCCURDY. What is going to be the estimated program for the D-5?

Admiral CLARK. It will probably run for the total acquisition—I am guessing—on the order of $20 billion, R. & D. and all the investment costs.

Mr. MCCURDY. When does the D-5 get on SAR? Is it on SAR now?

Admiral CLARK. It should be coming on in the near future.

Mr. MCCURDY. When is DSARC-II?

Admiral CLARK. At the end of the fiscal year.

UNIT COST INCREASE FOR TOTAL PROGRAM

PROGRAM ACQUISITION UNIT COST =	RDT&E ($)	+	TOTAL WPN ($) (TRIDENT+C-4 BACKFIT SSBN REQUIREMENT)			
	RDT&E MISSILES	+	TOTAL MISSILES FOR TRIDENT+C-4 BACKFIT SSBN'S			
31 MAR 81 BASELINE	$15,409					
PROGRAM ACQUISITION UNIT COST =	$3554.0	+	$11,762.8			
	25		969			
CURRENT ESTIMATE	$17,740					
PROGRAM ACQUISITION UNIT COST =	$3554.0	+	$8065.6			
	25	+	630			
CHANGE ($)	$+2,331					
(%)	15.1%					

Mr. McCURDY. With Carlucci's change in the acquisition cycle and your changing your milestone, has there been a decision made as to when—since I guess you will have DSARC-II but you don't have the milestone there—will there be a change when DSARC II is reported?

Mr. GARANT. The only change we have negotiated out now with respect to milestones is that the Milestone III production decision will be delegated to the service level. They will still have the OSD decision. When you go into engineering development, that is when you come up with your first estimate of cost, and that is the baseline for SAR's.

Mr. McCURDY. How much money will you have spent on R.D.T. & E. by the time—or give me an estimate—you get to DSARC III?

Admiral LOCKE. $636 million, in then-year dollars.

Mr. McCURDY. Which would be what, in escalated dollars?

Admiral LOCKE. That is escalated dollars.

Mr. McCURDY. In constant dollars, what would your estimate be?

Admiral LOCKE. Probably about 10 percent less, I would guess.

Mr. McCURDY. Mr. Chairman, if I might for other members here and for my own clarification, is there a possibility for those people who are going to be coming before us in the future on these programs, that we might ask them to look at our recommendation as far as the report, as far as getting some estimates of what the changes were, in a recognizable form, so that we could address the programs as we have just done?

Mr. STRATTON. Why don't you see if you can work that out with Mr. Klein, as to what would be feasible. We are on a tight schedule here. We have a lot of things to go through.

Mr. McCURDY. I am just saying, in the future, not these gentlemen, in the future, they should be prepared to address percentage of growth and so forth.

Mr. STRATTON. If we can get something that will apply without adding too much of a burden.

Mr. McCURDY. I think they have the information.

Is there a 1982 supplemental or change that is being discussed on these terms?

Admiral HOSTETTLER. There is none at the present time.

Mr. McCURDY. Do you know of anything?

Admiral HOSTETTLER. Not in these two programs.

Mr. McCURDY. But in other programs?

Admiral HOSTETTLER. I can't speak to that.

Mr. McCURDY. Thank you, Mr. Chairman.

Mr. STRATTON. Mrs. Byron.

Mrs. BYRON. Thank you, Mr. Chairman.

Let me switch over to Tomahawk for a change of pace. On page 8 you stated that the inventory objective was [deleted] missiles.

What predicated that type of formula as opposed to [deleted] which would seem more sensible for a production rate? Was the deciding factor the availability of launchers in the future?

Admiral HOSTETTLER. It really isn't any of those. Interestingly enough, the inventory objective of nonnuclear ordnance requirement—NNOR—if you will, is a model, the output of a model, which relates to capabilities on given vessels that could take a certain round. It relates to what the threat is perceived, given several scenarios in the mission areas that we are responsible for. It talks about the interplay of various weapons from long-range cruise missiles to the interplay of shorter range cruise missiles with air-to-air missiles, the interplay of surface, air and submarine, all in threat-oriented scenarios.

Having played that whole game, then I want to understand as to each vessel in that task group what probability do I want to accept that he will have the rounds he should have out of the model. When you crank all that out, you get a number.

[The following information was received for the record:]

NAVY STRATEGIC SYSTEMS—TOMAHAWK

At the end of the fiscal year 1983 funded delivery period (fiscal year 1985), the number of TOMAHAWK's available will equal the number of launch platforms available.

Mrs. BYRON. We are talking about a deployment, an increase in the size of the Navy, and an increase in the number of combatant ships; that has all been taken into consideration?

Admiral HOSTETTLER. Yes.

Mrs. BYRON. We are talking about bringing back the *New Jersey* and possibly the *Wisconsin*, and the *Missouri* and the *Iowa*?

Admiral HOSTETTLER. Yes, Ma'am.

Mrs. BYRON. Your scenario was bringing back two battleships?

Admiral HOSTETTLER. This model run would include the two battleships.

Mrs. BYRON. You are talking about having the first one back in the fleet next fall, the second one the year after that; you are talking about having x number of launchers available on a timeframe of, say, 1983?

Admiral HOSTETTLER. That is correct.

Mrs. BYRON. We currently have the number of missiles that will be required for the numbers of launchers that will be in the inventory?

Admiral HOSTETTLER. May I show the slide that I have? [Slide deleted.] Notice the inventory objective at the top. Now, this is what the model kicks out and says this is what I want to have at a given year in the future, say 1987.

In the interim then, we talk about what you are talking about—tactical loadout. I did this so you could see how our deliveries are matched, not only against inventory objectives downstream——

Mrs. BYRON. The curve dramatically goes up in 1984 to 1986?

Admiral HOSTETTLER. That is right. This is the escalation of the inventory here [indicating]. These are just tactical loads in holds.

Mrs. BYRON. We are going to have escalation of the curve; we are going to have the missile escalating; we are going to have the launchers escalating. Are we going to have the ship's capability escalating?

Admiral HOSTETTLER. Yes. That is why I matched here.

One of the items—I know what the inventory objective is, but how are you doing in terms of providing tactical capability to ships that need it now? The program is geared to provide that capability.

Mrs. BYRON. Part of the program is geared to retrofitting what is in inventory now, and the rest to what is coming along that is already under construction?

Admiral HOSTETTLER. That is correct.

Mrs. BYRON. It is not taking into consideration the new thrust that we are getting ready to address on escalation of ship construction?

Admiral HOSTETTLER. This plan provides for loadout based on the construction plan that we have put forth.

Mrs. BYRON. That you are hopeful will go through?

Admiral HOSTETTLER. Exactly.

Mrs. BYRON. Thank you. That is basically what I was after, matching up the systems.

Mr. STRATTON. Mr. Klein.

Mr. KLEIN. Admiral, to follow Mrs. Byron's question, with 120 missiles a year for the Navy and about the same number for the Air Force of GLCM's would seem to me to meet the 40-a-month capacity of Convair in San Diego. What I am wondering is, are the actual launchers going to escalate along the line you show here? And I am talking about vertical launch for the surface ships, a program that was in a little trouble.

Admiral HOSTETTLER. Which one is that, sir, vertical launch?

Mr. KLEIN. Yes, the vertical launch, and the facilities on the submarines. The submarine community is really going to load up their attack submarines with cruise missiles and let some of their other missions go. Is it your feeling that the launchers will, in fact, escalate along with the 40-a-month schedule? What I am getting at is, what is driving the production rate, the 40-a-month capacity of Convair?

Admiral HOSTETTLER. First of all, in terms of the requirement aspect, I would like to again say that the requirement exists. I can't speak for submarines. Well, in surface that is mine. I have seen the planning; I have looked at the risks in terms of vertical launch system, backfit of armored-box launchers, for instance, and timeframe. We are going to be on schedule barring some complete-

ly unforeseen glitch. We are going to make that schedule and so will they.

Now, the production does at least meet that requirement. In terms of capability for additional production beyond that rate, in terms of facilitation and so forth, I will ask Admiral Locke to comment on that feasibility.

Admiral LOCKE. Our production rate capability will be higher than 40 a month. One needs enough long lead to get to higher rates than that. The program that was planned out there was an orderly growth to get out to 1987 of 480 a year, which would be 40 a month.

We are bringing on two sources to build the whole missile, and if you put both of those sources together, they would have a surge capability of probably in excess of 100 a month. This is exactly why we are bringing them on, to give us an industrial mobilization capability.

Mr. KLEIN. Is the test equipment for the platform included in the numbers that you showed us for the 120?

Admiral LOCKE. What type of test equipment?

Admiral HOSTETTLER. Ship test equipment or round test equipment?

Mr. KLEIN. Either or both. What I would like is a breakout of what is included in the gross numbers in terms of flyaway and support equipment.

Admiral LOCKE. In cost?

Mr. KLEIN. Right, in the 1983 cost. You can provide that for the record.

Admiral HOSTETTLER. You want us to define what flyaway cost is and what it contains in this program?

Mr. KLEIN. Right.

Admiral HOSTETTLER. Did I also understand you wanted also to know, assuming it is not included in the flyaway, where the ship system test equipment and so forth is also covered?

Mr. KLEIN. Right.

Admiral HOSTETTLER. That which is required?

Mr. KLEIN. Right.

Admiral HOSTETTLER. We will be pleased to supply that for the record.

Mr. KLEIN. If it is in the Other Procurement account, I would like to know that.

Admiral HOSTETTLER. The ship system is in a different procurement account. That is the answer to the question there and is covered.

Now, in terms of the definition of what is in flyaway, do you prefer to answer that for the record?

Admiral LOCKE. It is easier because it is a detailed answer. The cost I put on before was program unit cost and that did include the support equipment and test equipment.

[The following information was received for the record:]

TOMAHAWK COST BREAKDOWN

The accompanying cost break sheet supports the President's fiscal year 1983 budget and shows at the arrow, the funds allotted for peculiar support equipment.

These equipments are investment items which support the missile at the depot and aboard ship.

JOINT CRUISE MISSILES PROJECT OFFICE
WEAPONS PROCUREMENT, NAVY
($ IN 000)

[illegible]

ELEMENT OF COST	IDENT CODE	FY81 (QTY: [illegible])			FY82 (QTY: [illegible])			FY83 (QTY: [illegible])			FY84 (QTY: [illegible])		
		QTY	UNIT COST	TOTAL/C	QTY	UNIT COST	TOTAL/C	QTY	UNIT COST	TOTAL/C	QTY	UNIT COST	TOTAL COST
AIRFRAME		[illegible]	703	35,165	[illegible]	556	49,844	130	484	59,257	312	469	146,434
ENGINE		[illegible]	269	13,450	[illegible]	254	22,357	130	232	27,807	312	245	76,540
BOOSTER		[illegible]	169	8,314	[illegible]	171	15,055	130	169	21,581	312	184	57,390
BGM-109A		—	—	—	—	—	—	26	319	8,279	78	365	31,359
BGM-109B GUIDANCE SETS (TASMOS)		[illegible]	609	16,235	27	699	18,859	54	574	30,975	148	595	88,053
BGM-109C GUIDANCE SETS		[illegible]	545	13,625	61	495	24,733	39	386	15,142	99	382	37,890
CAPSULE		43	145	6,259	62	147	9,104	70	154	10,795	170	177	30,012
CANISTER		9	59	472	26	48	1,240	50	44	2,218	142	44	6,232
PAYLOAD		[illegible]		1,301	[illegible]	13	1,155	92	14	1,334	342	15	3,597
ECO				1,215	9%		14,004	6%		16,572	7%		32,804
MISSILE HARDWARE		[illegible]	1,869	84,844	[illegible]	1,726	161,670	120	1,818	184,230	312	1,574	491,202
SE/PM CONTRACTOR				24,709			25,259			27,503			30,853
GOVERNMENT IN-HOUSE				—			2,000			6,000			6,376
TOOLING & TEST EQUIP				21,995			19,376			22,000			9,407
CONTAINERS		[illegible]	15	770	[illegible]	16	1,440	130	17	2,093	312	19	5,922
WARRANTY				2,500			14,488			15,002			30,310
FLYAWAY COSTS		[illegible]	2,888	144,907	[illegible]	2,410	212,698	120	2,231	287,988	312	1,865	581,899
→PECULIAR SUPPORT EQUIP				17,675			5,160			7,237			7,867
TRAINING EQUIPMENT				306			2,322			4,438			3,136
ILS DATA & PUBLICATIONS				9,352			5,880			5,227			4,288
ADVANCE PROCUREMENT (PY)				-10,700			-14,000			-14,000			-31,163
ADVANCE PROCUREMENT (CY)				14,000			14,000			21,163			23,211
TOTAL PROCUREMENT COST		[illegible]	3,510	175,500	[illegible]	2,559	225,200	120	2,435	292,163	312	1,920	599,049
INITIAL SPARES				10,521			11,195			16,192			20,826

Admiral HOSTETTLER. For the missile.

Mr. STRATTON. Did I understand you to say that you are speaking just for the surface ships in response to Mr. Klein's question?

Admiral HOSTETTLER. No, sir; both.

Mr. STRATTON. Presumably, there would be an additional requirement for the submarines?

Admiral HOSTETTLER. They are in there. I am sorry. That is a combination of naval requirement, submarine and surface, sir; both are presented.

Admiral LOCKE. I will help clarify something. With the surface ship the actual number of launchers is counted. With the submarine there is an assumed loadout for each submarine of [deleted] for each torpedo room. More could be carried, but that is the given loadout for our planning and for our direction on buying.

When the vertical launch capability comes along in the submarine, then those vertical launch tubes are counted, as well as the [deleted] planned for the torpedo room.

Admiral HOSTETTLER. We have defined for each class of ship—submarine and surface ship—an operational requirement mix. In vertical launch, for instance, as you know, we can take long-range cruise missiles, ASW missiles, as well as surface-to-air missiles. We have a plan; it is a breakout mix. Within Tomahawk itself there is a breakout of land attack conventional nuclear as well as the ship attack model by class.

Now, that is the overall plan. Clearly, a given battlegroup that is assigned a certain mission in advance might loadout, you know, put more of one or another, depending on the specific mission for that battlegroup. We have those numbers for each class wherever hold is assigned a specific kind of round.

Mr. STRATTON. Tomahawk is fired through a torpedo tube?

Admiral LOCKE. From the submarine, yes. From the surface ship it is fired from a canister which is inside of an armored box launcher, which also acts as a magazine. Later on, for both the submarine and the surface ship there will be a vertical launch capability.

Mr. STRATTON. It goes out underwater and then ignites like a Poseidon missile?

Admiral LOCKE. The booster of the Tomahawk ignites underwater boosting the missile to the surface and into the air.

Mr. STRATTON. Admiral Hostettler, you say in your statement that you have a procurement objective for Trident I of 630 missiles, which would appear to mean that you could loan out 12 Poseidon submarines with [deleted] missiles and load out 10 Ohio-class Trident submarines with the remainder and still have [deleted] Trident I missiles in reserve.

The first question is, how did the Navy arrive at the 630 objective.

[The following information was received for the record:]

NAVY STRATEGIC SYSTEMS—TRIDENT I INVENTORY OBJECTIVE

Mr. STRATTON. Admiral Hostettler, in your statement, on page 2 and on page 8, you show an inventory objective for Trident I as 630 missiles. It appears that you could load out 12 Poseidon submarines with 192 missiles and that you could load out 10 Ohio-Class Trident submarines with the remaining missiles and still have 174 Trident missiles in reserve. How did the Navy arrive at the inventory objective of 630? How many Trident I submarines do you plan to load with Trident I missiles and over what period of time? Is the number of pipeline missiles excessive?

Admiral HOSTETTLER. The Navy's procurement objective of 630 C-4 missiles consists of the following:

Shipfill [1]	
DASO [1]	
OT/FOT [1]	
FREP [1]	
Total	630

[1] Figures deleted.

These requirements "peak" in 1991, following which expenditures will be filled by returned shipfills of backfit SSBN's entering retirement and Trident SSBN's entering overhaul.

The first twelve Trident SSBN's will be outloaded with the Trident I missile. These outloads will occur from August 1982 through January 1991. The last Trident offload of C-4 prior to conversion to D-5 will be in September 1999.

The number of pipeline missiles is not considered excessive. Since the fiscal year 1980 Trident I missile buy, the rate of procurement has been phased at the lowest monthly rate to sustain quality and reliability, with actual deliveries of these missiles phased to actual requirements. Additionally, only [deleted] Trident I missiles of the entire procurement of 630 are allocated to FREP (i.e., operational support) and thus directly procured for pipeline.

The second question is, how many Trident submarines do you plan to load with the Trident I missile, and over what period of time? It looks as though you may have an excessive number in the pipeline.

Admiral HOSTETTLER. This is the buyout for the round and it includes 12 Tridents and 12 backfits, 24 rounds on the Trident submarines and 16 on the backfit.

Admiral CLARK. The difference between the actual ship fill and total objective is due to the operational flight test program that goes on continually throughout the life of the program.

Mr. STRATTON. Do you need all 630?

Admiral CLARK. Yes, sir, on the program that we have laid out there with the D–5 coming in, starting in 1989, and figuring how rapidly they will come into the fleet to replace Trident I, we have laid that out over the whole period of time and plan some operational tests each year. That is how we get the 630 total missile objective.

Mr. KLEIN. When will the 10th Trident submarine come on line?

Admiral HOSTETTLER. We will get you that answer.

[The following information was received for the record:]

NAVY STRATEGIC PROGRAMS—TRIDENT I

Admiral HOSTETTLER. The tenth Trident submarine will deploy in [deleted].

Mr. KLEIN. In other words, you know when you need the submarines but you don't know when the submarines will be on line?

Admiral CLARK. All the requirements are laid against the actual projected delivery dates of the submarines, newly constructed as well as those that go into overhaul and come out. Whenever a ship comes in and offloads missiles, we compute that in our asset calculation. All of that is cranked into the inventory objective calculation.

Admiral HOSTETTLER. You can count 480 in holds based on the plan of 12 Tridents of 24 each and 12 backfit Poseidon submarines with 16.

The question is why I need 630 to keep 480 onboard? The pipeline, the firings, because we are also talking about maintaining our surveillance as well as performance testing, and you are talking probably in the neighborhood on the average of [deleted] a year. It will depend on the year, but it will average out [deleted] firings that we have to plan for in addition to the pipeline.

So, the number really is not overly conservative, but it is probably the minimum in order to sustain that line. Now, that line is going to hold, assuming we get the 1989 IOC on D–5, of course. Then we are going to have to move out of the year-by-year basis to hold that number.

Mr. STRATTON. If you should speed it up, then you might have too many C–4 Trident I missiles?

Admiral HOSTETTLER. You can cut back in 1984 and 1985, Mr. Chairman, if it looks like we could do that.

Mr. STRATTON. The Trident missile, of course, is a nuclear warhead; is that right?

Admiral HOSTETTLER. Yes, sir.

Mr. STRATTON. The Polaris is also nuclear?

Admiral HOSTETTLER. Yes, sir.

Mr. STRATTON. Is the Tomahawk nuclear?

Admiral LOCKE. Some of the Tomahawks will be nuclear capable.

Admiral HOSTETTLER. There is a conventional warhead variant of the land-attack model, a conventional warhead anti-ship variant and a nuclear land attack version.

Mr. STRATTON. This is something which has begun to trouble me a little bit, because it looks as though the only kind of war that we are preparing for is a nuclear war. We have almost eliminated guns in the Navy except for the battleships that we are bringing

out. We had General Rogers before the full committee yesterday. He talked about how he wanted to prevent a nuclear war. He said that he felt that if we were to fire our tactical nuclear missiles that that tactical nuclear exchange would escalate into a full-scale nuclear exchange.

I don't expect you to answer this question, but it seems to me that we have gotten ourselves in a position where practically everthing we are building is nuclear. If the firing of a single nuclear weapon at sea or on the battlefield is likely to trigger the whole business, it seems to me we are shooting ourselves in the foot.

I think we have something here that perhaps we don't entirely understand.

Admiral HOSTETTLER. Mr. Chairman, I would like to comment on that.

Mr. STRATTON. I wish you would.

Admiral HOSTETTLER. If, in fact, the perception were that we were doing that, I think you would be right, that we would be shooting ourselves in the foot. Clearly the Poseidon-Trident program is the essential part, probably, of the nuclear triad, the strategic triad, and it is a nuclear triad.

Mr. STRATTON. That is right.

Admiral HOSTETTLER. That said and done, in Tomahawk, of the almost [deleted] rounds that are in the IO, inventory objective, it might interest you to know that only less than [deleted] of those, in fact, [deleted] is the actual number, are nuclear. The rest are all conventional warheads. The numbers were set up to provide an offensive distribution so that each vessel, each ship, each submarine, could carry with it, if you will, sufficient numbers, and they are going to be small but sufficient numbers, to say that we have a distributed offensive, both nuclear—and they know it—as well as distributed conventional tactical. So, the numbers are small but sufficient to provide it for those vessels.

Each gets up to, say, [deleted] rounds. The rest are all conventional if that answers your question.

Mr. STRATTON. I hope it does, because it looks to me as though what we are doing is using the nuclear weapon to overcome the problem of accuracy. If we are going to try to sink a ship 20 miles away, then we use a nuclear warhead because it is going to be easier to hit it.

I am wondering about the kinds of limitations that we are going to be putting on this possibility. Presumably the President of the United States is the only one who can authorize the use of a nuclear warhead. You have the Lance; you have the Pershing; you have the Tomahawk. It is going to be kind of tough. It took 2 or 3 days to get hold of the White House when the *Pueblo* was captured. We may have an even worse time trying to determine whether we should fire one of these weapons so that we could sink a ship that was far away and we were not sure we could reach it with a conventional weapon.

I think your answer there is perhaps reassuring, that we have some conventional warheads. I have been thinking about this thing since General Rogers spoke and it disturbs me a little bit.

Admiral LOCKE. Mr. Chairman, to amplify it, all the antiship Tomahawks are installed with conventional warheads.

Mr. STRATTON. What else are we going to use?

Admiral HOSTETTLER. The land-attack version does have both warheads. In the land-attack version when I say each ship may carry up to [deleted] rounds, that is land attack only. The ship version is all tactical, conventional warheads.

Mr. STRATTON. Do we have nuclear torpedoes, too?

Admiral SMITH. [Deleted.]

Admiral HOSTETTLER. [Deleted.]

Mr. STRATTON. Do we have any nuclear depth charges?

Admiral SMITH. [Deleted.]

Mr. STRATTON. That presents the same problem.

Mr. BENNETT. I would like to echo the concern of the chairman. I guess one reason I feel this way about it is because all the evidence I have heard before the committee is that there is very strong nuclear superiority on the part of the Russians. You don't start a war in an area where you are going to get beaten. It is to our advantage not only because we want to take care of mankind and see that nobody is terribly distressed, but also because we no longer have atomic superiority. The number of rounds they have, the amount of stuff they can deliver, is astronomical.

There is no way that we are going to catch up, from what I have heard. Maybe I am wrong about what I have heard, but I have heard that repeatedly. I tend to believe it because it comes from the Pentagon. It certainly is not the kind of war we want to start; however, I suspect the Russians have similar things aboard their ships. Maybe they don't, but I guess they do.

I would think if we once started having this kind of interchange, there would be no way of holding it down to tactical. In other words, I think once you go to strategic, once you go to atomic power, it will be an atomic war, and that is not one that we are going to win.

Of course, nobody is going to win it, but it will be very distressing to realize that we will have as many Americans killed as Russians, from the figures given to me.

I share the chairman's concern about it. I guess the only handle on it is let us hope that it is clear that the President will make the decision so that there will not be any fuzzy thinking on the part of some particular ship commander that he might be able to go to atomic weapons without the clearance of the President.

There is no possibility of that occurring, is there? That being so, I don't see there is anything to worry about.

Admiral HOSTETTLER. Mr. Bennett, I think that the concern you raise on command and control is an important issue. I would like to say that in terms of, say, Tomahawk, although we have [deleted] rounds, the safeguards, the command and control structure, are going to be as carefully watched on this or even more so than any we put aboard our vessels, submarines, or surface ships. I am not suggesting that the laws of physics provide foolproof situations, but as close as you can get to it is what we have had these many years, I might add at some reasonable expense to us in terms of people training, inspections and so forth.

I can assure you that we will meet every requirement in detail to assure that you have those guarantees. No question about it.

Mr. BENNETT. Thank you.

Mr. STRATTON. Mr. Hunter, do you have any questions?

Mr. HUNTER. Just one, Mr. Chairman.

Gentlemen, what is the range of the antiship conventional Tomahawk?

Admiral LOCKE. The operational effective range is 250 nautical miles. The actual range is greater than the aerodynamic range depending on how you fly it. This range is 400 or 500 miles.

Mr. HUNTER. That would be the land target for Tomahawk?

Admiral LOCKE. That is the antiship Tomahawk.

Mr. HUNTER. How about the land target?

Admiral LOCKE. The explanation concerning the range of the land-attack Tomahawk is more complex.

Mr. HUNTER. What would be the outer limits?

Admiral LOCKE. The nuclear warhead version?

Mr. HUNTER. No, the conventional.

Admiral LOCKE. Launched from a surface ship, it could get [deleted] miles. Launched from a submarine the range would be in the neighborhood of [deleted], depending on how you flew it.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. STRATTON. Mr. Leath.

Mr. LEATH. No questions, Mr. Chairman.

Mr. STRATTON. Admiral, have you finished your presentation? Do you have anything more?

Admiral HOSTETTLER. I have, and I did want to mention that I did provide for the record a statement. My hope is that I would provide time for questions.

Mr. STRATTON. The GAO, I am advised, has criticized the Tomahawk program because of lack of over-the-horizon target capability and lack of [deleted] targets.

What has been done to alleviate those problems and do you have confidence they can be solved before the Tomahawk IOC is achieved?

Admiral LOCKE. There are a number of Tomahawk IOC's. The first one, the conventional land attack is this summer. We depend upon the Defense Mapping Agency for digital maps. The production of digital maps is an orderly process [deleted] by this summer.

Mr. STRATTON. What about the lack of over-the-horizon target capability?

Admiral LOCKE. Before I respond to the over-the-horizon question, I would like to add the priority of targets is determined by the theater commanders-in-chief, and they, in turn tell the Defense Mapping Agency what they want done first. So, the requirements match what is coming out of the Defense Mapping Agency.

On the over-the-horizon targeting, [deleted]. That has been demonstrated in the technical evaluation and the operational evaluations to date. It is a successful system.

We are able to [deleted]. That capability I believe we have demonstrated. It is up to the operational test force to make their analysis after we finish the operational evaluation.

Mr. STRATTON. You crank in, in advance, what the coordinates are of a particular target and you have a particular set of digits you crank in?

Admiral LOCKE. In the antiship version, the targets will move. We compensate for that by having a radar seeker that sweeps the

ocean looking for the target. The missile maneuvers like a scout bomber, an unmanned scout bomber, looking for the targets. That is unique to the Tomahawk missile. I don't think any other missile in the world does that kind of thing. That search capability enables us to compensate for the uncertainties of location of the target at launch and for the target movement during the time of flight.

Now, for the land-attack targets, those are fixed targets, preplanned in advance, so they can be hit with great precision.

Mr. STRATTON. Any other questions, Mr. Klein?

Mr. KLEIN. Did the GAO check with your office, Admiral Locke, or anybody else's, before they submitted the report?

Admiral LOCKE. Yes, they always give us that courtesy before the House briefing. We generally clean up most of their questions, but there is always something they take a conservative view on, a show-me view. The GAO area of concern is appreciated and that concern will probably be there until we finish the operational evaluation.

Mr. KLEIN. Are they privy to the sources you reviewed for the over the horizon?

Admiral LOCKE. Yes, sir.

Mr. KLEIN. There is no security problem that they would have?

Admiral LOCKE. They would have a security problem with some of the sources but it is not an issue because those same security problems would exist aboard ship. We solve that by eliminating the description of the source when the information is sent to the ships or submarines. That takes it down to the secret level. Therefore, the GAO could have the same information, the same results of the tests to date that were available to us and available to the people who participated in it aboard the submarine.

Mr. KLEIN. Is it the general Navy position and opinion now that over-the-horizon [OTH] targeting problems are pretty much behind us?

Admiral LOCKE. That is my technical assessment.

Admiral HOSTETTLER. We are talking about a new missile system here. As I indicated to start with, it is a breakthrough when you understand what we have and the kind of ranges we are talking about. I think what we see in this program from an operational and requirements view is that we have sufficient OTH to use this round in a very high number of tactical cases.

Does that mean we are finished with OTH? Not on your life. We have many programs coming down at various stages to help solve that problem. There is no panacea to OTH; [deleted] which we have in R. & D. now as a matter of high priority to finish the job.

So, I think it is fair to say that we have come a long way in a few years in OTH. The introduction of Harpoon is what forced us, but we have a long way to go to finish it off. I suspect it will continue to involve a large number of years because our span of influence is now several hundred thousand miles, if you look into the future, it will never stop.

Can we work with this round and make use of it today? Yes, sir.

Mr. KLEIN. Thank you.

Mr. STRATTON. Any other questions?

Mrs. BYRON. I have no questions, Mr. Chairman.

Mr. STRATTON. If there are no other questions, thank you very much, Admiral Hostettler and your associates. You will be supplying us with that information as you indicated for the record?

Admiral HOSTETTLER. Yes, sir.

Mr. STRATTON. Thank you very much.

[The following questions were submitted to the witness to be answered for the record:]

NAVY STRATEGIC PROGRAMS—TRIDENT I

Mr. STRATTON. Admiral Hostettler, you indicated that the TRIDENT I inventory objective has been reduced with the forthcoming introduction of the D–5 missile. When will TRIDENT I procurement end and when is TRIDENT II Missile procurement scheduled to begin?

Admiral HOSTETTLER. this budget request is based on a final TRIDENT I procurement of 30 missiles in fiscal year 1985 and an initial TRIDENT II procurement of 58 missiles in fiscal year 1987.

NAVY STRATEGIC SYSTEMS—TRIDENT II MISSILE

Mr. STRATTON. What warhead is being considered for the TRIDENT II missile? Will a new reentry vehicle be required to achieve the desired accuracy? If the missile does not achieve the desired accuracy, will you be required to develop a new high yield warhead and a reentry vehicle?

Admiral PRINDLE. The warheads presently under consideration for the TRIDENT II (D5) missile are the [deleted] MK 4 reentry system currently deployed in the TRIDENT I (C4) missile, and a modified (for Navy use) version of the [deleted] MK 12A reentry system presently deployed in Minuteman III. In addition, there is in progress a joint DoD/DE study assessing the need for development of a more effective reentry system using existing warhead designs. Should it become desirable to develop a new reentry system, it will be done almost exclusively for yield and throw weight considerations, little can be done with ballistic reentry bodies in the interest of improving accuracy. Attainment of desired system accuracy is predominantly the result of improvements to the guidance, navigation, fire control and missile subsystems.

NAVY STRATEGIC PROGRAMS—SUPPORT EQUIPMENT AND FACILITIES (NAVY MISSILES)

Mr. STRATTON. The Navy is requesting $16.5 million for missile support for fiscal year 1983, including spares and repair parts, missile industrial facilities and astronautics. How much is requested for each of these activities? How do you compute the need for initial and replenishment spares? Is the amount provided for spares sufficient?

Admiral HOSTETTLER. The $16.5 million for missile support in FY 1983 consists of $12.8 million for Astronautics, $2.6 million for Missile Industrial Facilities and $1.1 million for Replenishment Spares.

Replenishment Spares requirements are computed on an individual line item basis through stratification of requirements and application of assets based on projected demand/usage rates. Based on current projections the funding requested should be sufficient.

NAVY STRATEGIC PROGRAMS—TRIDENT II

Mr. STRATTON. The TRIDENT II missile was being discussed for the TRIDENT submarine as far back as 1974 or 1975. Yet, it appears that an initial operating capability will not come about until 1989 or 1990. The TRIDENT II has been criticized as an extremely long and costly R. & D. effort. Is it not possible to speed up the development and fleet introduction of the D–5 missile, thereby achieving an improved capability earlier by two or three years and saving an additional two or three years of inflation?

Admiral PRINDLE. Presently we are attempting to identify to what extent we might accelerate the deployment of the TRIDENT II seapon system. Specific issues being addressed are the impact on the funding profile as well as any compromises anticipated to the performance of the system. This assessment will be completed and will be briefed to the Secretary of the Navy this month.

Mr. STRATTON. We will stand in recess until 2 o'clock.

[Whereupon, at 11:50 a.m., the subcommittee was adjourned, to reconvene at 2 p.m. of the same day.]

The subcommittee met at 2:15 p.m. in executive session, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. This afternoon we review the major Navy and Air Force command, control, communication, and intelligence, C^3I, programs requested in the 1983 authorization. Funds are requested in the Military Procurement accounts and in Other Procurements for C^3 programs.

Our first witness this afternoon will be Vice Adm. Nagler, Director, Command and Control, Office of the Chief of Naval Operations; and Admiral Nagler will be followed by Brig. Gen. Randolph, Director of Space Systems and Command, Control and Communications, Office of the Deputy Chief of Staff for R.D. & A. Headquarters, Department of the Air Force. He is accompanied by Colonel Fornell, Deputy Director, Development and Production, also in the Air Force Headquarters.

Following General Randolph will be Brig. Gen. William Bowden, Deputy Director of Logistics, Plans and Programs within the Air Force Headquarters.

Mr. Donald C. Latham, Deputy Under Secretary of Defense for C^3 and Intelligence within the Department of Defense has presented a classified statement with the request that it be included in the record.

Without objection, that statement will be inserted in the record directly before the testimony of Admiral Nagler.

I note that the witnesses have provided comprehensive statements which we will ask them to summarize and then speak to the specific programs contained in the budget request.

It is my understanding that most of this matter to be discussed this afternoon will be of a classified nature and therefore under the authority previously granted to the chairman by the subcommittee the subcommittee will go into executive session, and anybody who is not fully cleared for that will be excused at this time.

Admiral Nagler, do you want to present your statement, sir?

BIOGRAPHICAL SKETCH OF VICE ADM. GORDON R. NAGLER, U.S. NAVY

Vice Admiral Nagler was promoted to his present rank on 1 September 1980 and assumed the duties as Director, Command and Control (OP-094), Office of the Chief of Naval Operations. He is married to the former Nannette Holland of Portland, Oregon, and they have two sons: James, who is married and has three children, is a Fairfax County policeman, and Richard, who is also married, is a probationary officer with the City of Virginia Beach.

Vice Admiral Nagler's previous tours of duty are:

COMMAND AT SEA

COMCRUDESGRU TWO, 1978-80; U.S.S. *Little Rock* (CLG-4), 1971-72; U.S.S. *Josephus Daniels* (CG-27), 1970-71; U.S.S. *Mullinnix* 1965-67; U.S.S. *Forester* (DER-344), 1961-62; U.S.S. *Peregrine* (MSF-373), 1954-56; and U.S.S. PC 581, 1949-51.

SEA DUTY

U.S.S. *Philip* (DD-498), executive officer 1960-61; U.S.S. *McCafferry* (DD-860), COMM-ASW officer, 1947-49; and U.S.S. *Merrick* (AKA-97), first lt. (Byrd Antarctic Expedition 1946), 1946-47.

SHORE DUTY

Office of the Chief of Naval Operations, 1980–present, 1976–78, 1973–74, 1967–69. Commander, Naval Telecommunications Command, 1974–76; Staff, CINCLANT/CINCLANTFLT, 1972–73; Staff, Joint Chiefs of Staff, 1963–65; Staff. CINCPACFLT, 1956–59; and Staff, COMINELANT, 1952–54.

SCHOOLS

Senior Officers' Ship Material Readiness Course, 1978; Industrial College of the Armed Forces, 1969–70; Armed Forces Staff College, 1962; U.S. Naval Postgraduate school, 1951–52; General Line School, Newport, Rhode Island, 1948–49; and Duke University, 1943–45.

STATEMENT OF VICE ADM. G. R. NAGLER, USN, DIRECTOR, COMMAND AND CONTROL, OFFICE OF THE CHIEF OF NAVAL OPERATIONS, DEPARTMENT OF THE NAVY

Admiral NAGLER. Yes, Mr. Chairman, with your permission I will give a brief verbal summary of the statement that you have for the record.

Due to the initiative of the Congress last year and especially the initiative of this committee, the command and control of the Navy, we believe, improved tremendously in 1982. I will highlight some of the things that were done in the past year and then the 1983 program.

In the area of satellites, Congress gave us permission to go to contract with Hughes Communications Corp., which we did on December 30, for four LEASAT, for 20 years of satellites. That contract, as I said, was made on December 30. The first satellite will be completed in December of 1983 and will be launched from the shuttle, according to the present suttle schedule, by June, 1984.

The committee also gave us long lead money for Fleet Satellite Communications Satellites 6, 7, and 8, and we just last month let that contract for long-lead items for both the satellites and the expendable launch vehicles' long lead. That contract went to TRW.

Finally, in the area of satellites, this committee gave us money to start full-scale development of terminals for extremely high frequency satellites [EHF] and for a transition package for the Milstar program, which is a joint program under the leadership of the Air Force. We have let that contract to Lincoln Labs who will furnish that transition package to TRW, and we have gone to full-scale development on our terminals for EHF.

In fiscal year 1983 we are asking for $330 million to continue support of those three statellite programs.

As for Navstar GPS, the Navy continues to support that program. In fiscal year 1983 we have requested $40 million and it will be used for advanced clock testing, hardening and reliability improvements and testing of an engineering development model.

Another key item is our Minimal Essential Emergency Communications Network [MEECN]. While some of this is R.D.T. & E., Mr. Chairman, I think I should mention it, because in fiscal year 1984 there will be large procurement dollars.

The TACAMO aircraft will be built to a force level of 18 TACAMO aircraft. We are asking for $106 million in this fiscal year for two communications suites to go into two aircraft that were purchased in 1982; to harden five more aircraft, electromagnetic pulse hardening [EMP]; and for current day-to-day operations.

In addition to that, we are ready this month to go in for replacement TACAMO aircraft, called the ECX; an RFQ is scheduled to be issued this month. I mention that because in 1984 there will be $159 million in procurement. It is R.D.T. & E. in 1983.

Our interoperabilities are proceeding with Air Force between the Air Force VLF-616 equipment, their command aircraft and our Verdin VLF equipment, and we will meet operability by [deleted] this year.

WWMCCS—World Wide Military Command and Control System—we are asking for $4.8 million this year to replace outdated hardware at our WWMCCS sites. The Navy is responsible for command centers at Pacific Fleet, CINCPAC, COMUSKOREA, COMJAPAN, CINCLANT, Military Sealift Command and CNO Command Center, and Commander Naval Forces Europe Command Center.

That is a quick summary of my statement. I am ready for any questions you may ask, Mr. Chairman.

Written Statement of Vice Admiral Nagler

Mr. Chairman, I welcome the opportunity to be here today to discuss the Navy's Fleet Satellite Communications (FLTSATCOM) and Leased Satellite (LEASAT) Programs, as well as address those issues of the NAVSTAR/GPS, Minimum Essental Emergency Communications Network (MEECN), Worldwide Military Command and Control System WWMCCS) and the Defense Meteorological Satellite Program (DMSP) as they relate to the Navy.

SATELLITE COMMUNICATIONS

Less than one year ago, in June 1980, I was privileged to appear before the House Armed Services Committee to seek that Committee's assistance in meeting a major need in the Navy's, and the Department of Defense's requirement for continuity of Ultra High Frequency (UHF) satellite service. This Congress provided us with the assistance sought and I shall present to this Committee a report of the progress made since that date.

Let me begin by first discussing the circumstances of LEASAT. At that time we reported that the Hughes Communications Services, Inc. (HCSI), the firm under contract to the Navy for nearly gobal UHF satellite communications services on behalf of the Department of Defense (DOD), had reached an impass. Their contract specified a beginning service date of April 1982, yet the Space Transportation System, known as Space Shuttle, had experienced delays in reaching operational state thus denying to them an opportunity to fulfill their contractual obligations. Accordingly, HSCI apprached the Navy seeking relief. Not relief in meeting the service contracted for but rather the date(s) which service(s) would begin. The Secretary of the Navy found sufficient basis to agree that revised reconsideration. As a result, the Secretary of the Navy and the Chairman of the Board of Hughes Aircraft Co. signed an Aide Memoire which provided for revised service dates and payment schedule subject to review of the shuttle test flights, a realistic shuttle schedule and Congressional approval for advance payments. That approval was forthcoming in the fiscal year 1982 Authorization and Appropriations Acts and the Navy has modified the contract as follows:

(a) Provides payment in advance of service availability—$67M in fiscal year 82.

(b) Establishes new dates for satellite communications service: November 30, 1984; December 31, 1984; November 30, 1985; and March 31, 1986.

(c) Provides to the Navy the flexibility of delaying service up to three (3) years from the above dates. Excess costs for launch beyond that incurred by the contractor would be borne by the Navy.

(d) Should an earlier DOD priority launch be required, LEASAT satellites will be available for shipment to Cape Canaveral as follows: December 1, 1983; June 1, 1984; December 1, 1984; and June 1, 1985.

We are pleased with our arrangements with Hughes regarding LEASAT, and we are confident that the Space Shuttle will ultimately fulfill its operational role. At the same time, due to stated DOD requirements, we also request that Congress continue a proven satellite program that provides that UHF service required for both

the strategic and tactical forces. That program is FLTSATCOM with its companion payload AFSATCOM. FLTSATCOM is not dependent upon the Space Shuttle, and has to date given excellent service. Regrettably, but important to this issue, FLTSAT V suffered severe damage during launch last August and, although it achieved its intended orbit, it cannot replace one of the first four FLTSAT satellites as intended. While we did not expect this catastrophic launch vehicle failure, which resulted in physical and electrical damage to the satellite, it was this very type of occurrence that prompted us to seek your support for the authorization and appropriation needed to construct three additional FLTSATCOM satellites. Your support has permitted us to begin this construction through the procurement of long-lead items to ensure the availability of the first of these satellites by early 1985. In addition to protecting us against further delays in the Space Shuttle Program, the FLTSACOM satellite provides essential service to the airborne strategic forces. Alternative means to provide the service have been sought, but coupled with budget and implementation schedules, none has surfaced to replace FLTSATCOM and AFSATCOM in the ability to meet both the Airborne Strategic forces needs and continue to meet essential tactical requirements of the DOD.

There are many shortcomings in UHF satellite communications, not the least of which is its susceptability to jamming, but it is available now and provides this nation with a capability unmatched in the world. With this capability, we are able to provide command and control to our widespread forces in peacetime and well into a period of tension and crisis, as demonstrated most recently in the Indian Ocean/Persian Gulf area. A further example was the recent attack on our aircraft in the Gulf of Sidra. The use of FLTSATCOM enabled us to receive this report within the same minute, and permitted real-time secure voice monitoring of this event throughout. Our fiscal year 82 budget provides for an initial payment of $67M (O&MN) for LEASAT. In addition, fiscal year 82 provided funds for the procurement of FLTSATCOM satellites and launch vehicle long lead items in the amount of $65M (WPN). The fiscal year 83 budget request will continue payment for LEASAT ($55.0 OM&N) and provide $231.3M (WPN) for the procurement of FLTSATCOM satellites #6 and 7 as well as launch vehicles.

To counter the problems of jamming, the Navy, and the other services have embarked on a program of developing [deleted] Satellite Communications systems to serve our Strategic and Tactical forces. To ensure that this new satellite program, the Military Strategic, Tactical and Relay (MILSTAR) system, fulfills these needs, a Joint MILSTAR Program Office has been established at the U.S. Air Force Space Division Headquarters in Los Angeles.

In support thereof, Navy has assigned personnel to this important office. In addition, Navy has undertaken lead service responsibility for the Joint Terminal Program Office under the Joint MILSTAR Program Director to guide the terminal development programs of the services to ensure commonality, interoperability and economy of development. As part of this new undertaking the Navy is funding for the development and integration of [deleted] package which can be flown on FLTSATCOM #7 and #8 to provide the space segment necessary to fully conduct technical and operatonal evaluation [deleted]. Navy commenced Full Scale Development of terminals in Jan 1982 [deleted]. Fiscal year 1982 funds ($34.2M RDT & E) [deleted] provide the initial efforts in full scale development of earth terminals and commence the development of the [deleted] package for FLTSATCOM satellites #7 and 8. The fiscal year 1983 budget request of $44M R.D.T. & E. will continue both the development of the [deleted] package and terminal full scale development.

NAVSTAR/GPS

With respect to the NAVSTAR/GPS program, the Navy continues to support this program. NAVSTAR/GPS, a space-based radio navigation system will be used by all DOD Services for both geodetic and relative positioning between a user platform and a source with known geographical coordinates. It will provide continuously three-dimensional position and velocity information together with systems' universal time. Eighteen satellites in 12-hour monitoring stations, a control segment and suitable user equipments complete the system. System accuracies are expected to meet user needs for enroute/general purpose and most objective area requirements. User equipments are planned for different degrees of sophistication to satisfy user needs and costs. Users will obtain position and time information without having to radiate a signal.

The U.S. Air Force is the Executive Agent for NAVSTAR/GPS, with advanced development funds contributed by all Services. A NATO Deputy has been established at the Joint Program Office to ensure NATO interoperability. Specific Navy

programs that contribute to this system include clock technology and both advanced development and procurement of Navy user terminals. The Navy fiscal year 82 budget request was reduced by Congress from $51M to $34M (R.D.T. & E.) resulting in a restructured program. Our fiscal year 1983 budget request of $40M (R.D.T. & E) will restore advanced clock testing, hardening/reliability improvements, begin Phase II testing of Engineering Development Model equipment in developmental and operational testing for carriers (CV), aircraft (A-6) and submarine (SSN) as well as initiate manning for the Joint Service Support Management Office.

MEECN

The Minimum Essential Emergency Communications Network (MEECN) it that combination of systems and network interfaces which are designated to operate and survive to provide a means for assured delivery of nuclear control orders in a stressed environment. Navy components of this system include: the TACAMO airborne survivable relay system and transmission systems which interface TACAMO with other elements of the National Airborne Command Post network and enhance the effectiveness of nuclear control order delivery to Navy strategic forces.

TACAMO

TACAMO is the primary survivable dedicated Navy relay communications system to the submarine missile forces. The current TACAMO EC-130 force level of 14 aircraft provides the capability for maintaining an aircraft continuously airborne in the Atlantic and [deleted] the Pacific. The program is building to a JCS approved force level of eighteen, which will be attained in 1983 to provide a capability to maintain one aircraft continuously airborne both in the Atlantic and Pacific [deleted].

The fiscal year 1983 submission includes funding to: support the operation of the current system; add electromagnetic pulse protection to five additional aircraft; and procure two additional communications suites to complete the outfit on two aircraft procured in fiscal year 1982. The electromagnetic pulse protection procurement will raise the total of TACAMO aircraft hardened to nine. [Deleted.]

ECX

As has been reported to you before, the curret TACAMO system possesses many limitations. The current aircraft used to fly the mission are operated as near to maximum weight as possible; [deleted]; and the current force level of 18 aircraft must be expanded [deleted] in the late 1980's to satisfy the JCS directed readiness posture of one aircraft continuously airborne [deleted].

Changes in threat, national strategic policy and increased operational capabilities of the sea-based strategic missile system due to the introduction of the Trident weapons system have expanded the mission requirements of the TACAMO airborne communications relay system [deleted]. A cost benefit analysis of corrective actions indicates that the optimum alternative is the transfer of the TACAMO communications capability to a modern, more capable airframe and that in this configuration, the TACAMO mission can be performed by a fleet of 15 ECX aircraft.

The report, which documents this analysis and examines alternatives to this action in response to tasking from the fiscal year 1982 hearings, was forwarded by Secretary of Defense Weinberger to the Committee Chairman on January 25, 1982. The Request For Proposal for competitive procurement for ECX will be issued to industry this month. The fiscal year 1983 budget supports this development as the top priority Navy strategic C^3 initiative.

MEECN TRANSMISSION SYSTEMS

Effective relay and transfer of nuclear control orders through Defense and Service communications systems requires precise standardization and configuration control. [Deleted.]

Under conditions stressed by jamming the normal delivery rate of nuclear control orders transmitted through the MEECN system is lengthened in time because of extra anti-jam processing required to "punch" through this threat. Navy has been assigned the lead service responsibility to develop a message compression and coding technique to minimize the total delay when operating in this mode. This development, designated the MEECN Message Processing System (MMPS) entails: software modifications to the Navy VLF/LF transmit and receive equipment systems; hardware modifications to Air Force transmit systems, and software modifications to various shore and airborne broadcast and relay systems.

The fiscal year 1983 total submission has been increased by $7 million to complete the development of MMPS and its interface with other elements of the system. [Deleted.]

WWMCCS

Navy efforts within the World Wide Military Command and Control System (WWMCCS) center on support of the command centers serving CINCLANT, CINCLANTFLT, CINCPAC, CINCPAFLT, CINCUSNAVEUR, COMUSKOREA, COMUSJAPAN, the Military Sealift Command and the Navy Command Center serving the Chief of Naval Operations. Fiscal year 1982 budget provides $1.8M for WWMCCS procurement. These funds are being used to maintain the current WWMCCS capability by replacing equipment which has become outdated. The requested fiscal year 1983 procurement of $4.8M is for the continuation of equipment replacement. Much of the outdated WWMCCS hardware at Navy supported sites was acquired ten years ago, is unmaintainable and no longer supports operational requirements.

Not part of the WWMCCS but aligned in its fleet function is the Navy Command and Control System (NCCS), a principal part of which is the Tactical Flag Command Center (TFCC). TFCC will provide evolutionary development of an afloat commander's Tactical Command and Control System. The program features three increments: (1) a ship alteration on 14 carriers and 5 cruisers that provides battle space for the Officer in Tactical Command (OTC), (2) a baseline Flag Data Display System (FDDS) using current Mil-Standard hardware and available software to provide an initial and automated positional display and decision aid. The baseline system will also allow top level design evaluation, and (3) an enhanced FDDS incorporating Mil-Standard hardware using High Order Language.

Fiscal year 1982 OPN funds ($16.2M) provide for procurement of seven hardware sets for Increment 1 ship alterations, and four FDDS suits. Fiscal year 1983 funds in the amount of $23.4M will be used to procure the remaining two FDDS suits, for two Increment 1 ship alteration sets and for six Large Screen Display units. In addition, fiscal year 1983 funds for procurement of replacement Navy Standard Central Processing Units (CPUs) fiscal year 1983 R.D.T. & E. funding ($11.4M) will support the development of software that will be used in Increment 3 FDDS.

DMSP

The Defense Meteorological Satellite Program (DMSP) is a joint Air Force, Navy and Army program, with Air Force acting as Executive Agent. The program provides high resolution atmospheric data and a limited amount of oceanographic data from two meteorological satellites. Navy use is for the purpose of forecasting environmental conditions in support of Naval operations.

Under this program Navy has equipped six carriers (CV) with satellite receiving systems for direct readout of visual and infrared atmospheric imagery. Systems are programmed for the remaining eight CVs. In addition, two shore based systems for direct readout have been acquired. Navy has also participated in the joint development with Air Force of the special sensor microwave-imager (SSM/I), which will measure atmospheric moisture, surface winds, sea surface temperature and depict polar ice conditions. Fiscal year 1982 funds are $1.3M (R.D.T. & E.) and $3.8M (OPN). The Navy fiscal year 1983 request ($1.3M R.D.T. & E. and $5.3M OPN) will procure one CV satellite receiving system and spare parts. It will also continue the refinement of the applications algorithms for the SSM/I sensor.

In summary, this Congress has provided us with the means to meet our objectives in maintaining and improving satellite communications, strategic connectivity requirements, navigation and meteorological systems that will permit the wartime command and control needed by the Navy and DOD.

Mr. Chairman, I am now ready for any questions you may have.

Mr. STRATTON. Thank you, Admiral.

As you know, the Navstar/GPS did not fare very well in the last authorization bill. Has there been any change or improvement in that program that might yield better results this year?

Admiral NAGLER. Since the Air Force is the executive agent of that program, maybe I should leave some of that, Mr. Chairman, for the Air Force to answer. I will speak to it from a Navy standpoint:

We fully support Navstar/GPS. We see the primary need for it for over-the-horizon targeting for long-range cruise missiles from ships and aircraft and for worldwide postion grid lock when two or more battle groups are together.

We have also been very active in the Office of the Secretary of Defense meetings to have civilian aircraft share some of that cost, and OSD recently sent a letter to Mr. Helms, Federal Aviation Agency, with a cost proposal. Mr. Helms has not accepted that cost proposal and discussion is still ongoing.

We believe we have the program on track, the Navy's responsibilities, but I would like to leave the overall program to the Air Force to answer.

Mr. STRATTON. How much are you asking for this this year?

Admiral NAGLER. We are asking for $40 million. There is no procurement in 1984. The first procurement comes in 1985. We have $40 million in R.D.T. & E., primarily for testing, clock technology and so forth.

Mr. STRATTON. The procurement for this program does not affect this committee this year; is that right?

Admiral NAGLER. From a Navy standpoint that is correct. I am not positive for the Air Force.

Mr. STRATTON. Don't you have some user fees there?

Admiral NAGLER. Yes, sir. As I recall, Congress last year told us to look into the civilian users sharing the cost of Navstar/GPS. Under Dr. Wade a committee was formed. We have sent—like I said—to Congress our proposal for the sharing of the cost. That is still under discussion. I do not want to indicate that that is a closed issue by any means.

Mr. STRATTON. The main reason I think that we scrubbed this program last year is because of the cost, which I understand is estimated to be as high as $9 billion. Have you been able to bring that down a little bit?

Admiral NAGLER. From a Navy standpoint, we have not. Our basic requirements we continue to scrub and try to bring down, and we are talking now total life cycle cost past the year 2000.

Since the Air Force is executive agent on that, I would like to give that question to General Randolph.

Mr. STRATTON. Do the other two gentlemen have statements? I think it might be better to take them as we go. We will just concentrate on your concerns here.

What would be the effect on Navy programs if the GPS were canceled?

Admiral NAGLER. The primary effect would be over-the-horizon targeting. As you know, the ship or aircraft needs to know the exact position, or it helps to know the exact position, to fire a missile, and to know the exact position, to fire a missile, and to know the exact position several hundred or more miles away where the enemy aircraft or ship may be, that would help us no end.

From the standpoint of two battlegroups operating together in support, the exact location of the other battlegroup, that we call grid lock, without the error of navigation of 4 or 5 miles for each ship, helps us greatly in fighting the battle.

Mr. STRATTON. How are we able to use the Trident or the Poseidon if we don't know what our position is today?

Admiral NAGLER. We do know where our position is, Mr. Chairman, with the transit satellite, which is not as accurate as the GPS satellite.

The testing for the C–4 missile is now being done through the GPS satellites that are currently in orbit.

Mr. STRATTON. What is the advantage of [deleted] ultra high frequency communication?

Admiral NAGLER. I would say it is a difference between peace and war. The ultra-high frequency, UHF, satellited which we have in being today, and the entire Department of Defense is using, are jammable. You can intercept the communications and you can direction-find where the ships or aircraft are. It is a very good peacetime crisis management system and it has helped us no end. [Deleted.]

Mr. STRATTON. Is [deleted] higher than ultra high?

Admiral NAGLER. Yes, sir.

Mr. STRATTON. The higher the better; is that right?

Admiral NAGLER. Yes, sir; [deleted].

Mr. STRATTON. Why has the JCS directed that the Tacamo aircraft be increased from 18 [deleted]?

Admiral NAGLER. The Trident operating area increases in size appreciably over the current submarine operating area. The JCS have directed the Navy to have [deleted], as differentiated from [deleted] have the Tacamo aircraft [deleted] so that it can communicate [deleted] with a Trident submarine by the late 1980's [deleted]. To be [deleted] it requires a [deleted]-Tacamo aircraft force level, where the current force level is only 18.

Mr. STRATTON. I notice in your statement that you say that these aircraft are continually airborne in the Atlantic and [deleted] in the Pacific. [Deleted.]

Admiral NAGLER. Again, it is the Trident operating area and they are not operating in the Indian Ocean.

Mr. STRATTON. [Deleted.]

Admiral NAGLER. They do not need to do so with the Trident missile, as differentiated from the SSN submarine.

Mr. STRATTON. You don't need this kind of arrangement then for the SSN's?

Admiral NAGLER. Tacamo is a strategic system which only operates with the fleet-ballistic-missile submarine, not the attack submarine; that is correct.

Mr. STRATTON. We are not going to have a full Trident capability for some time, judging from what we heard this morning. [Deleted.]

Admiral NAGLER. To the best of my knowledge, Mr. Chairman, the [deleted].

Mr. STRATTON. Yes, but we are not going to have the Tridents for some time. This is still a gleam in the eye, particularly with regard to the Trident missile that will probably be available sometime after the third or fourth world war, the way we are going. They might call them Trident but they are not going to have that D–5 capability.

Do you mean to say that we don't have any ballistic missile submarines operating there until the Trident comes along?

Admiral NAGLER. [deleted].

Mr. STRATTON. The answer, in other words, is no; is that right?

Admiral NAGLER. Yes, sir. I don't quite understand your question, because the Poseidon missiles, to reach their targets, do not have to operate in the Indian Ocean.

Mr. STRATTON. I know, but they are supposed to be fooling the Soviet submarines so that we don't always oppose them in the same place, so that they can be picked off the way the Minuteman silos can be picked off.

Admiral NAGLER. Our submarines are not susceptive to detection the great majority of the time, especially our fleet ballistic missile submarines. The Pacific is a large ocean and there is a lot of operating room to operate in the Pacific and Atlantic Oceans.

Mr. STRATTON. You are not the submarine expert, but maybe I will try to see if we can get an answer to that. I am not quite satisfied with that. That probably does not relate to this particular matter.

Admiral NAGLER. All I am doing is providing the strategic connectivity, C^3, for our ballistic missile submarines.

Mr. STRATTON. I understand.

Mr. Klein.

Mr. KLEIN. Admiral, I think it might be helpful at this point if you will explain what the Tacamo mission is and in general what the operating areas of our fleet ballistic missile submarines are.

Admiral NAGLER. Yes, sir. Let me take the Tacamo and I apologize for assuming that that was readily available.

Our Tacamo aircraft is an airborne strategic connectivity aircraft that is our most survivable means of communications to our fleet ballistic missile submarines. It has between a 5- and 6-mile-long wire antenna that trails out of the aircraft that transmits very low frequency communications which penetrate the sea water quite a few feet for the communications to the submarine. They are continuously airborne in the Atlantic, [deleted] continuously airborne and can receive communication by various means back from the mainland and transmit that information to the submarines, SSBN submarines.

In addition, the Tacamo has a high frequency capability; it also has a UHF satellite capability for communicating. It is our most survivable means of communication to the SBN submarine in time of war.

Mr. STRATTON. Sort of a mobile ELF then?

Admiral NAGLER. Yes, sir. ELF I will compare later, if you wish, but I don't like to compare the two because one is completely survivable and the other one is not built to survive.

The Tacamo aircraft is currently operating overweight. It is a 20-year program; it is a C–130-type aircraft. It is relatively slow. Today our operating area in the Pacific will be increased several-fold with the Trident submarine having the ability to go all over the Pacific for stations. So, to get the Tacamo's at these various places in the Pacific, to get on station, will take much longer. They will spend less time on station and they will need more Tacamo aircraft to keep them on station for some time. They have been operating for 20 years with our Polaris missile submarines.

I am sorry, Mr. Kein. I forgot the second question.

Mr. KLEIN. I think the problem in getting to an area, in other words, we would have a little trouble getting a submarine to an area, an operating area, [deleted] from the United States?

Admiral NAGLER. It takes longer and you really don't need to go that far; it just makes the problem of connectivity that much more difficult. You would need more Tacamo and more bases.

Part of our Tacamo strategy is [deleted].

Mr. STRATTON. You have that Somalia base down there that does not seem to be used. You could base the Tridents down there and fly off that 15,000-foot runway?

Admiral NAGLER. With all due respect, Mr. Chairman, I won't try to get into where we base Trident submarines.

Mr. STRATTON. That is one way of fooling them.

Mr. Hillis.

Mr. HILLIS. I have several questions on Tacamo. I will leave them with you for the record. One thing I wonder about, and you answered part of this already in your general description about the program, am I correct that the line item budget that is for ECX is about $2 billion for 15 aircraft? This doesn't include funding for communications. My multiplication works out to $35 million per airplane. That seems pretty expensive, particularly as it appears that you probably will be looking at an existing aircraft such as the E-3A or something of that kind; it is not something to be built like the MX, as I understand it.

Will you comment on this? It seems to me we are getting into a great deal of expense here, if my information is correct.

Admiral NAGLER. Yes, I will be happy to comment.

The ECX program, the request for quotation will go out this month. It will take 15 ECX's with a jet-type engine to cover the area that would take [deleted] EC-130's to cover. Our estimate is that the lifecycle cost of [deleted] EC-130's turns out to be about $4.2 billion, I believe, and I might be a point off there, versus about $3.8 billion for 15 ECX's. That is lifecycle cost, operating cost, spares, et cetera.

We anticipate—and not having any bids or anything else in on the RFQ, of course, yet—about $1.6 billion to repace these aircraft to buy 15 ECX aircraft.

Mr. HILLIS. Are 15 going to be enough when you consider certain numbers have gone down several times for maintenance?

Admiral NAGLER. Yes, sir. We have looked into the flight hours. Fifteen ECX's will do what [deleted] C-130's will do.

Mr. HILLIS. Thank you.

I will leave the balance of the questions for the record, if you will answer them.

Admiral NAGLER. I will be happy to.

[The following questions were submitted to the witness to be answered for the record:]

ECX

Mr. HILLIS. It would seem to me it would be difficult to establish ECX requirements with confidence if the submarine operating areas that Tacamo communicate with are not known. Since the range of the Trident D-5 missile has not yet been fixed, how is it you feel confident to proceed with the ECX?

Admiral NAGLER. The general operating areas for SSBNs, carrying the Trident I (C-4) missile, including the new Trident SSBN are known. Although the Trident II

(D-5) missile has not yet been developed, preliminary design alternatives indicate that the D-5 missile range for proposed payload configurations will achieve comparable range to the present C-4 missile. Therefore, ECX requirements can be established with confidence.

Mr. HILLIS. Your ECX line item has about $2 billion for 15 aircraft, with no funding required for the communications gear. Now that works out to be about $135 million per aircraft. Why are they so expensive when EC-130s without the electronics gear sell for about $17 million?

Admiral NAGLER. The ECX funding line that approaches $2 billion for 15 ECX aircraft, includes funding for not only airframes, but also: research and development of the prototype aircraft, five communications suites, refurbishment/systems transplant funds for communications suites from operational aircraft and spares support. The $17M C-130 price does not include: EMP hardening, ESM, Support, Spares, or integraton of the communications suite. A review of all alternatives, forwarded to the House and Senate Armed Services Committees by Secretary of Defense Weinberger on 25 January 1982, indicates continuation with the required numbers of EC-130's to support the Tacamo mission will, in fact, cost more through its life cycle.

Mr. HILLIS. I understand that your need for a higher aircraft cruise speed conflicts with the need for low speed to achieve good antenna verticality; on what basis have you decided that the value of the higher cruise speed outweighs the need for higher antenna verticality?

Admiral NAGLER. The verticality requirement for EC-130s is the same as that required for the ECX. this parameter [deleted]. Orbit maneuvers have been flown by a Naval Air Test Center pilot on a large jet-powered, swept-wing aircraft, and antenna drag, a known factor which is compensated for by engine power, was not an appreciable factor. Despite a cruise speed higher than the current EC-130, a 1977 Naval Air Development Center report (No: 77261-30) found a number of aircraft able to perform the orbit maneuver to achieve the required antenna verticality; therefore, no conflict between cruise speed and antenna verticality exists. In addition, a higher aircraft cruise speed will minimize transit time to operating areas and increase survivability through avoidance maneuvers.

Mr. HILLIS. If we accept the new strategic programs strategy, systems survivability over a protracted period is required. As I understand it, you are saying that you can cover [deleted] with only 14 ECX aircraft. Given that you will probably lose a significant fraction of the fleet over a protracted period, are you sure that 14 is enough? Why wouldn't it be better to buy more of a less expensive aircraft like the EC-130?

Admiral NAGLER. Increased numbers of aircraft do not relate directly to an increased probability of survival in a surprise attack; rather, a continuous airborne posture [deleted] increases the survivability, endurance and reconstitution capability of the Navy airborne system. System survivability is a major consideration in studies conducted under the Navy Strategic communiation Continuing Assessment Program (SCAP). SCAP results show that: [Deleted.]

The capabaility to: remain airborne and within effective communications range for a maximum period of time; have sufficient reserve fuel capability to reach a large number of contingency air fields; conduct air refueling; have sensors to detect threat and maneuverability to avoid location and attack are characteristics which, when combined with force levels, determine total system survivability. The analysis developed in support of the decision to proceed with the ECX program shows that it would require a force level of [deleted] EC-130 aircraft to perform the communication portion of the mission alone.

Analysis shows that transfer of the Tacamo communications capability to a modern fan-jet type airframe can enable the mission to be performed with a fewer number of aircraft (about 15), with all desirable survivability enhancements included, and provide room to incorporate expected system growth at less cost. On a life cycle cost basis, the cost of buying, owning and operating the ECX fleet would be less than that required for the EC-130 force needed to perform the same mission. Viewed in total perspective, ECX will significantly increase the survivability and endurance of the command and control connectivity to our strategic submarines.

Mr. HILLIS. Has the Navy installed a long wire antenna on a large, swept wing jet aircraft such as the 707 and tested it for deployment and operation in the orbit maneuver? I would suggest the Navy check out the orbit maneuver with a wire and prove to the Committee that it will work.

Admiral NAGLER. Orbit maneuvers have been flown by a Naval Air Test Center pilot on a large jet aircraft and the antenna drag, a known factor which is compensated for by engine power, was not an appreciable factor. Aircraft power, drag and

airframe performance characteristics were subjected to the Naval Air Development Center (NADC) aircraft performance computer modeling. An NADC 1977 report found that a number of aircraft, including most jumbo jets could perform the orbit maneuver, which is simply a circle that is a function of airspeed and bank angle. In view of this experience and the low technical risk associated with the orbit maneuver, the Navy does not consider any additional feasibility testing is required.

Mr. HILLIS. As I understand the ECX situation, you plan to buy an in-production aircraft and your requirements appear to best fit only the E-3A (Boeing 707-320). How are you ensuring that there will be strong competition in this procurement?

Admiral NAGLER. The ECX requirements are based upon the Tacamo mission not any individual airframe. The winning airframe will be selected based upon a combination of technical, cost and supportability evaluations. To minimize cost and schedule risk, the Navy plans to buy an existing/in-production aircraft. The quoters are not restricted from proposing aircraft which may include derivations of existing aircraft or modifications to available active or retired fleet aircraft. A number of aircraft are considered capable of scoring well in this competition.

Mr. STRATTON. Admiral, the problem is that this subcommittee has not reviewed these systems before. These have been funded under other procurement, or they have been before R. & D., so I think, as Mr. Klein indicated, what we really need is a little detail filled in as to exactly what these programs are. That would apply, I would think, to this thing called MEECN, minimum essential emergency communications network.

If we don't know what these things are, we are going to have trouble defending them on the floor and, more importantly, in conference with the Senate. The people over there are already sharpening their knives for $20 or $30 billion cuts in the defense budget and we are going to need to have a little explanation.

So could you give us a little detail here in the record so that we can handle this a little more effectively?

Admiral NAGLER. It is a complicated subject. I will try to sum it up: MEECN means minimum essential emergency communications network; that is the strategic communications, the minimum communications, we need to connect to our strategic Navy forces, which are the SSBN submarines and the Tacamo aircraft. The main part of MEECN is Tacamo. The Tacamo line item is that aircraft I have just described. There are many other electronic portions for minimum essential qualifications. One is an emergency action message, an EAM.

How do we transmit that out to alert our forces to take emergency action? That takes time when you are in a jam environment. It might take anywhere from [deleted], depending on the type of communications you are using and data rate to get through the enemy's jamming.

Part of MEECN is compressing that through a compression technique to be able to send that faster in a jamming environment. Part of MEECN is making sure that the [deleted], which is a means of communicating a VLF signal in a jammed environment so that they will [deleted] of this year.

It has taken a lot of effort to do that. Our Tacamo aircraft communication with the Air Force aircraft, the SAC command post, for example, CINCLANT command post—all of that is the minimum essential communications effort.

There are many other coding techniques and communications improvements that are being done to ensure redundancy in that

MEECN network, but that is the final line, minimum communications we need, strategic not tactical.

Mr. STRATTON. If we have the Tacamo, why do we need the ELF?

Admiral NAGLER. The ELF, extremely low frequency communications system, has been a controversial system for about 20 years. Last year this Congress approved the President's recommendation to go with ELF in Michigan and Wisconsin. The program was cut back again to be as small as we could make it and still communicate. It won't survive, say, a nuclear war.

Let me describe the system.

Mr. STRATTON. What I mean is, if we have Tacamo—and I didn't realize what Tacamo was or what it was doing—if we have that, I don't know why we go to all the heartaches and political problems to try to put the ELF in Michigan and Wisconsin and God knows where.

Admiral NAGLER. Let me start with it this way: A fleet ballistic missile submarine has to be in communication 100 percent of the time with the National Command Authority. That means that she has to be trailing a wire closer on the surface or with a buoy close to the surface to receive that very low frequency communications signal which might penetrate 10 or 12 feet underneath the surface. Tacamo is a VLF signal, and very low frequency signal will only penetrate so many feet below the surface. She has to have an antenna stream constantly to communicate with the Tacamo aircraft; that antenna rides on or just below the surface; it is a long wire. To communicate through satellites, she has to expose a mast above the surface with a satellite antenna on it, so the submarine is restricted close or near the surface to communicate at very low frequency with a Tacamo aircraft or satellite, SBN submarine.

ELF will allow that submarine to become unrestricted; she will be able to operate [deleted] in peacetime. We do not expect [deleted].

Since we are in closed session—[deleted]. This releases the submarine from being close to the surface. She can [deleted]. It is a slow data rate, that can send ABC in 15 minutes. You can make "ABC" mean anything, like "There are no messages for you." Instead of coming up [deleted] to communicate, you keep the SBN so she does not have to stay near the surface.

We have an entirely different means of operating our SSN forces from our SSBN's.

Mr. STRATTON. The Tacamo has a long wire, say 5 or 6 miles, trailing out of it, and then the submarine has a wire trailing out of it in the water, so you have two wires communicating with each other through the water; is that it?

Admiral NAGLER. That is correct, but the submarine with the trailing wire antenna today, SSBN submarine, must remain so that wire is around the surface, so the submarine is [deleted] beneath the surface.

Mr. STRATTON. That ELF is a very slow communication; is it not?

Admiral NAGLER. ELF is a very slow data rate. It will give you, like I say, three letters, and it is really not letters; it is bits and dashes, in 15 minutes, so you can make "ABC" mean "Come up to receive satellite communications" or something, or you can make "ABC" mean "I have no communication; stay down."

An SSBN submarine 60 days on station might not have to come up for days and days to get any important messages. If we were attacked, that signal, ELF signal, is continuous; it is constantly being sent. [Deleted.]

Mr. STRATTON. Mrs. Byron, do you have any questions?

Mrs. BYRON. I have one question which is one that may be a little far off in the future, but it is one that concerns me somewhat. We have been talking today about command and control systems. The Navy, like the other services, is depending upon command and control and communications for their survival. We are getting ready to launch in the next couple of weeks our third Shuttle. We have been hearing the beginning of some discussion on the use of the Shuttle for military aspects.

Have you in looking toward the future, which is necessary, way down the road, found any ideas for using the command and control and intelligence satellites once we get them into orbit, as far as your submarines are concerned, and if we are dependent upon a Shuttle or using a Shuttle for getting equipment up, what happens if we have a failure, a catastrophic problem, with our Shuttle?

Admiral NAGLER. Yes, ma'am, I will take both of those in order, if I may. Let me get a Navy plug in. On the two Shuttle flights, three out of the four pilots have been Navy pilots, so I am proud of them.

These programs will be briefed to this committee later under a separate, very compartmentalized briefing.

Today our submarines take advantage of satellites. We currently have surveillance, communications and [deleted] satellites [deleted]. In the future it will be even more so. I feel that all of the naval operations in the next 10 years will change very, very much as we have more and more surveillance satellites, both by the Russians and by the Navy and the Air Force on our own forces.

Today it is very difficult. The Russians have satellites that fly around [deleted], but that will increase. It will also increase by our own forces.

The Shuttle has concerned me no end. This committee last year asked us about an aide memoire from the Secretary of the Navy. With the Shuttle slipping several years, one of our communications programs slipped and caused us many, many problems in our coverage. I think from what I have seen lately—and I had a meeting with one of our leading astronauts yesterday, discussing the Shuttle program.

Mrs. BYRON. One of yours?

Admiral NAGLER. Yes. We have 24 Naval and Marine astronauts.

Mrs. BYRON. One of your leading astronauts?

Admiral NAGLER. Yes.

Mrs. BYRON. It was a Navy astronaut?

Admiral NAGLER. Yes. We had lunch together, incidentally. Captain Kerwin, Joe Kerwin, who was in the second Space Lab, 28 days in space, and is now being reassigned as NASA's chief scientist to Australia. He was up receiving a briefing yesterday. Joe told me yesterday he thought no doubt the Shuttle will go the 22d of this month. I feel very confident we are getting much better on the Shuttle, but I am worried about putting all of our launch capability in a Shuttle.

We must retain some expendable launch capability in addition to the Shuttle.

The Department of Defense is reviewing this whole program now and I believe there has to be a mixture. I believe the Shuttle is needed; we have to get on with it; we can't let it slip any more but we can't put all our eggs in one basket.

Mrs. BYRON. We are talking about some extremely expensive communications systems coming along in the near future, and I think we just on this committee want to be prepared with the answers when we are hit on the floor on the expenses, because people are beginning to look at the Shuttle as an answer or a panacea for everything, and I don't think that will be the ultimate goal, because we have an enormous number of individuals who want to place packages and payloads on the Shuttle once it gets into operation.

Admiral NAGLER. I agree, it won't be an answer. If I may add to that, I am very parochial in this area, but command and control can save us an awful lot of money in the overall deployment of forces—and I will give you two examples—and it will save lives:

When the *Mayaguez* incident occurred, we did not have any peacetime or crisis management satellite communications. We lost quite a few marines in that crisis. We did not know where any other U.S. flag merchant ships were within 2 days of that. It took us quite a few days to sort out what was going on halfway or more around the world. The last—I think it was August—the Gulf of Sidra incident—last August when Libya shot at our F-14 aircraft, within 1 minute we had that information in the Navy command center, passed to the Secretary of Defense and the White House, and then we monitored everything that was going on for the rest of that day in that incident.

I think we were in a much better position to react or not react and employ our forces or not employ our forces.

What we have in the Navy today is that I am very proud of our peacetime crisis management Navy command and control system; it is the best in the world, including NASA. NASA can only communicate with the Shuttle about 40 percent of the time it is in orbit. [Deleted.]

If we are going to employ our forces effectively, as Admiral Hayward has repeatedly stated, we must improve our command and control capability.

I am sorry for giving a speech.

Mrs. BYRON. That is all right. Do we need to hear from the Air Force on how many pilots they have on the Shuttle? They can't tell off the top of their heads really fast?

General RANDOLPH. More than half the pilots.

Admiral NAGLER. We are more cost effective, since three out of the first four flew were Navy.

Mr. STRATTON. Any other questions?

General Randolph, you don't have any statement, or you submitted one for the record; is that it?

General RANDOLPH. Yes, sir.

Mr. STRATTON. If you have to go, Admiral, that will be OK.

Admiral NAGLER. I would appreciate it, Mr. Chairman.

Thank you very much. Again, I am very sincere; this committee really helped us in the 1982 budget. I believe that if it continues, the Navy's command and control will certainly improve. Thank you very much.

Mr. STRATTON. We will do our best.

[The following questions were submitted to the witness to be answered for the record:]

EHF/UHF

Mr. STRATTON. What is the advantage of [deleted] over ultra high frequency communications?

Amiral NAGLER. The principal advantages of the [deleted] over the ultra high frequency band (UHF) for communications are that it permits:

(1) The use of sophisticated anti-jam signal processing techniques [deleted].

(2) the development of highly directional signals that are difficult for the enemy to intercept (a low probability of interrupt capability);

(3) the design of small, light weight antennas for shipboard and aircraft use [deleted] and [deleted].

(4) avoiding the spectral crowding (interference) problems in lower frequency bands.

These capabilities are essential to the development of wartime system that must operate in a severe electronic counter measures (ECM) environment.

[Deleted.]

GPS

Mr. STRATTON. What would be the effect on Navy programs if the Global Positioning System (GPS) is cancelled? How much is in the budget for procurement of Navy user terminals?

Admiral NAGLER. If GPS is terminated, the GPS funding would have to be reallocated to other navigation programs that are now planned for phaseout when GPS becomes operational. These programs would include an improved TRANSIT satellite system, development and replacement for the existing OMEGA receivers, integration of the TRANSIT/OMEGA and inertial systems for all platforms, and finally, expansion of the existing LORAN C coverage. There is no procurement in either 1983 or 1984. The first procurement is in 1985.

COMMAND AND CONTROL COMMUNICATIONS

Mr. STRATTON. Admiral Nagler, why have the Joint Chiefs of Staff directed that TACAMO aircraft numbers be increased from [deleted]?

Amiral NAGLER. The Joint Chiefs of Staff have directed a late 1980's [deleted] readiness posture (Joint Strategic Planning Document FY-84-91/JCS-2143/573 of 19 November 1981.) The force level to satisfy these requirements is affected by three parameters:

1. The increased operational area capability of the TRIDENT system,

2. The JCS directed (JCS 2056/556-6 of 30 November 1977) Performance Standard of communications connectivity required to be maintained to submarines operating in this area, and

The range and endurance of the TACAMO Aircraft. Taking these parameters into account, our analysis reveals that [deleted] EC-130's or 15 turbo-fan aircraft (ECX) would be required to support a [deleted] capability.

Mr. STRATTON. Admiral Nagler, will you explain in a little more detail just what is meant by "minimum essential communications"?

Admiral NAGLER. A communications capability must exist throughout the spectrum of conflict in order to exercise deliberate and precise control of strategic nuclear options for the Single Integrated Operational Plan (SIOP) execution, and termination. Accordingly, the Minimum Essential Communications Network (MEECN) was developed and comprises two principal categories:

MEECN systems: Those designed to operate and survive, providing a means for communicating nuclear execution and termination orders in a trans-attack environment. This includes: World Wide Airborne Command Posts (WWABNCP), the US Navy high power VLF relay aircraft (TACAMO), Emergency Rocket Communica-

tions System (ERCS) and GAPFILLER/LES-9 Statellite Systems. The more [deleted]. The latter resources are operated [deleted].

MEECN supporting systems: Those communications capabilities which have not been specifically designed to survive in the trans-attack environment. For the most part they are ground/based, fixed in place and employ a mixture of wireline and radio frequency (RF) transmission media. They consist of National Military Command Communications Systems, and Multi and Single Command Communications Systems. Because of their redundancy, they are expected to provide some degree of survivability in a stressed environment. The growth in [deleted].

FLTSATCOM

Mr. STRATTON. What was the cause of the failure of FLTSATCOM satellite number 5? Is this likely to happen with satellite numbers 6,7, and 8?

Admiral NAGLER. The failure of FLTSATCOM-V to achieve operational status was caused not by failure of the satellite, but by a delamination of the launch vehicle's inner skin of the nose fairing during launch. The delaminated inner skin struck and damaged the FLTSATCOM satellite before it was injected into orbit. This type of accident has not occurred in other Atlas-Centaur launches for either the FLTSATCOM satellites or the commercial Intelsat-IV satellites. Every effort will be made to ensure that the FLTSATCOM 6 through 8 launch vehicles will not fail.

SPACE SHUTTLE

Mr. STRATTON. It appears that the Navy's command and control systems, like those of the other Services, are highly dependent upon the space shuttle. This program is highly success-oriented. What is the backup position for getting all of the essential command, control and intelligence satellites into orbit in case of a catastrophic failure or the shuttle?

Admiral NAGLER. The Navy, like the other Services, was essentially committed to the STS by national policy mandate in 1978. This decision has now resulted in many systems being fully STS-optimized. Current planning, however, does provide a reasonable backup strategy utilizing current launch vehicles to protect access to space during the transition years. Certainly, protection against all possible contingencies is an unrealizable goal. However, a fiscally and programmatically conservative approach is being pursued which continues Titan 34D production capability at a low, long-lead item level, while procuring enough launch vehicles during the transition years of 1983 to 1987 to provide for reasonably assured access to space for essential command, control and intelligence satellites.

Mr. STRATTON. General, we will be glad to have your statement.

DEPARTMENT OF DEFENSE AUTHORIZATION FOR FISCAL YEAR 1983—DEPARTMENT OF THE AIR FORCE

STATEMENT OF BRIG. GEN. BERNARD P. RANDOLPH, DIRECTOR OF SPACE SYSTEMS AND COMMAND, CONTROL AND COMMUNICATIONS, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT, AND ACQUISITION, U.S. AIR FORCE

General RANDOLPH. Mr. Chairman and members of the subcommittee, I am pleased to appear before you today. This is my initial appearance in my new position. I am continuing a series of briefings on the Air Force aircraft and missile procurement programs.

Yesterday, Lt. Gen. Kelly Burke described the Air Force programs with regard to strategic offense and theater nuclear forces.

Today, I plan to focus on space and command and control and communications programs, and then the airlift and tactical air programs will be presented to this subcommittee in later sessions.

Details of these and related programs, Mr. Chairman, are contained in General Burke's prepared statement and the congressional justification materials which support the entire series of briefings.

Since my Air Force duties include responsibility for development and acquisition of both command, control, and communications systems and space systems, with your permission I would like to enter my formal testimony into the record and then use briefing aids to present first an overview of the objectives of the Air force in these areas and then information on the specific programs that the committee requested to hear about.

Mr. STRATTON. Without objection, that will be done.

General RANDOLPH. Thank you, sir.

General Bowden is also with me, and he is going to talk about the Other Procurement areas which I understand are being heard for the first time by this subcommittee.

We are at the Space and C^3 area in General Burke's overall presentation as far as the Air Force is concerned.

I will have Colonel Fornell with me and he is prepared to specifically address AWACS and TR-1 questions, which I understand the subcommittee is interested in.

Sir, with that, I would like to proceed to using my briefing aids.

First of all, I would like to start by giving you a couple of charts on where I think we are in the world of space and C^3 and the reason why we want to work these programs very closely together, because many of the command and control and communications activities in the Air Force involve space activities.

As you see on this next chart [deleted], there is a considerable amount of money. As a matter of fact, our request for fiscal year 1983 is on the order of $6 billion for all of the Air Force space activities. I will be covering, of course, only a portion of those and will be concentrating on the procurement aspects as requested by the committee.

I should also like to point out to you, however, that while you see the appropriations going up as far as the requests are concerned, the percent of total obligation authority in the Air Force remains at approximately 7 percent of all the TOA that we are requesting.

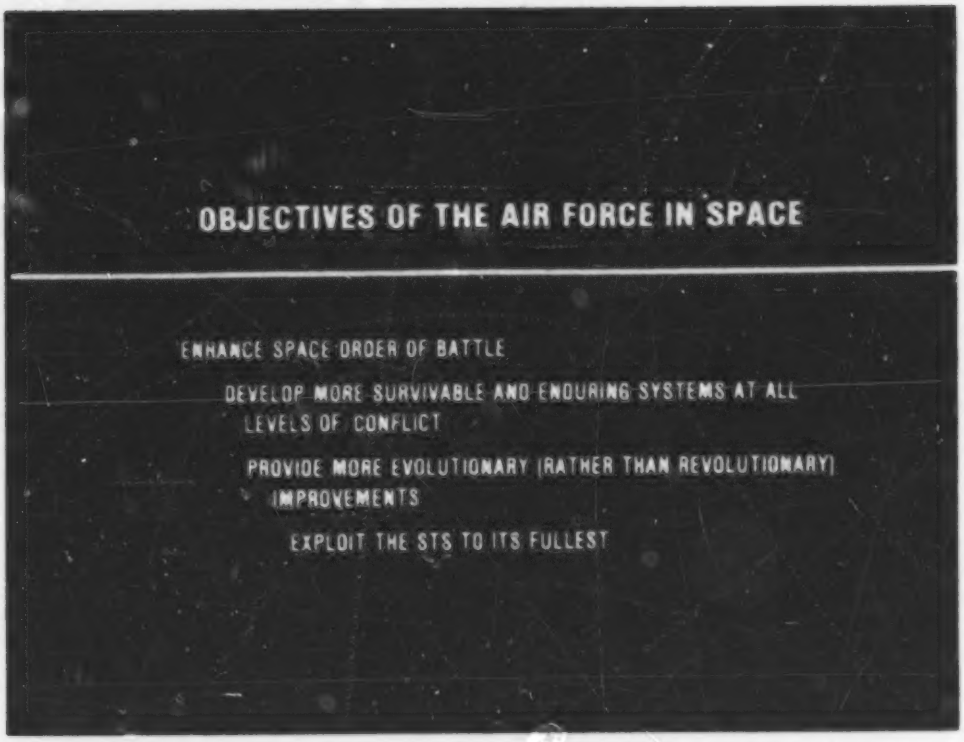
Now we are not alone in being active in space. This next chart [deleted] points out the fact that the Soviets are also extremely active in space.

The blue line represents the number of launches [deleted] over time as a function of the time shown on the horizontal scale. As you can see, in 1981 the Soviets made [deleted] far as launches were concerned and [deleted].

We in the United States made 19 attempts and we succeeded 18 times.

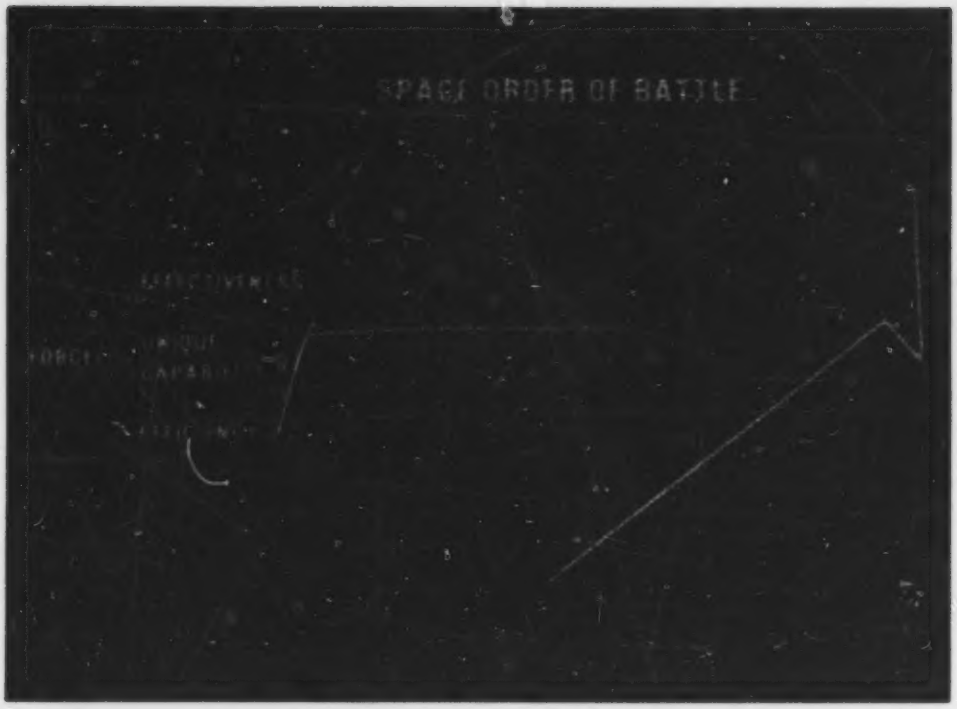
I should point out the fact, however, that this is not quite as bleak a picture as it may appear, because the Soviets have not yet learned to use space as efficiently as we have and their spacecraft do not last as long, on the average of [deleted] as opposed to 5 or 6 years of average lifetime for our particular spacecraft.

With that, I would like to talk a little bit about some of the objectives that we have in space, and these are the objectives that are supported by our overall budget. This simply says we want to give the battlefield commanders the kinds of equipment that they need to pursue the battle.


OBJECTIVES OF THE AIR FORCE IN SPACE
ENHANCE SPACE ORDER OF BATTLE
DEVELOP MORE SURVIVABLE AND ENDURING SYSTEMS AT ALL LEVELS OF CONFLICT
PROVIDE MORE EVOLUTIONARY (RATHER THAN REVOLUTIONARY) IMPROVEMENTS
EXPLOIT THE STS TO ITS FULLEST

You will see as I go through some of the details that is precisely what the fiscal year 1983 request and 5-year request are designed to do. We have received a considerable amount of discussion in the area of survivability. I have one chart that follows this that talks to the kinds of things we are doing to make our space system more survivable and part of the war-fighting inventory that our fighter forces have.

Because this involves a considerable amount of money, we are attempting to evolve rather than make drastic changes, and as Mrs. Byron pointed out, we are attempting to make full use of the space transportation system because that is an expensive launch capability, and I will discuss a little bit about how that fits into our overall program shortly.



As far as the order of battle is concerned, this is a notional chart; it talks to the time here and discusses the increases in activities over time that the Air Force is doing.

As you know, our primary warning system for SLBM's and ICBM's comes from space systems and [deleted] percent of the military communications are via space. Of course, we have capability in all the areas as shown here. For example, our antisatellite weapon will be tested [deleted].

Mr. STRATTON. I think we are going to have to recess here, General, for about 10 minutes, because we have a vote on the floor. We have to answer that. It is a very important vote.

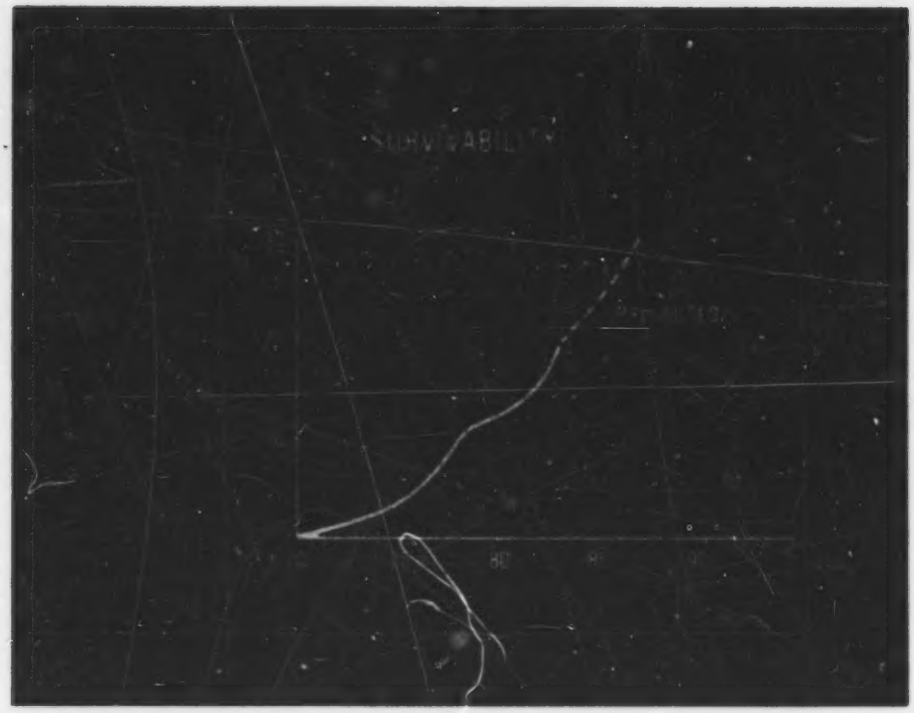
[Recess.]

Mr. STRATTON. The subcommittee will come to order.

We will continue with our presentation, General.

General RANDOLPH. We just talked a bit about where the Soviets are and the space order of battle.

I would now like to turn to the things that we are doing in the area of survivability and show you that we are working on the issue of survivability quite hard on this next chart here.



One of the things that I think we have not done very well is to explain our program to make our space systems more survivable

As you can see here, we started back in the early 1970's with a rather negligible budget. In our 1983 request, approximately 18 percent of our budget is devoted to making our space systems more survivable. Furthermore, for the 5-year defense plan we are moving up toward 30 percent of that budget, to insure survivability, so it is an exceptionally large piece of our budget devoted to survivability of space systems.

With regard to the kinds of things that we do to make our space systems more robust, I would like to simply show you one example in the area of communications, show two charts, one discussing the present force structure and then show you the things that we are doing to improve the force structure in the area of communications, and then I will talk, sir, specifically to the programs.

On orbit right now we have the satellite data system spacecraft to provide high latitude coverage. The Navy FLTSATCOM satellite provides equatorial coverage. That provides global coverage for the Air Force communications system at the ultra high frequency. In the area of long-haul communications, there is a defense satellite communications system, phase 2. There are six of these spacecraft currently on orbit. They operate at the superhigh frequency, and have a wide band width to provide large amounts of data up to TV-type data rates.

In addition, we do have access to the NATO spacecraft which operates also at the superhigh frequency and there are three of those spacecraft currently on orbit.

We also lease service at the same frequency from the Domsat, RCA Domsat. We have other lease service at the ultra high frequency rates. The problem, however, as Admiral Nagler pointed out, is our antijam protection; our ability to withstand jamming by Soviet jammers is not what we would like to have. Therefore, our current program is to address specifically the limitations that you see here.

On this next chart, sir, you see that by 1988 at the end of the 5-year defense program we plan to have a force structure that looks something like this. (Chart [deleted]) We will have some residual FLTSATCOM and satellite data systems spacecraft on orbit; however, we plan to replace this program with the Milstar program that Admiral Nagler referred to, wherein we will have both the polar coverage and synchronous equatorial coverage with this Milstar, which is designed specifically for survivability and with the best antijam (AJ) protection that we can possibly field, we see no capability of the Soviets in a technical sense to overcome the AJ comparability of that system.

In September of this year we are about to fly the defense satellite communications system, phase three. That will be first launched in September. That also has high antijam protection for the purpose of the wide-band communications.

Mr. STRATTON. Are these satellites just pictorial or do you have everything operating in that equatorial orbit?

General RANDOLPH. On the previous chart we do have everything operating. This is a projection for 1988, but the budget supports the purchase of these numbers of spacecraft.

Mr. STRATTON. Are all of those satellites that you have circle the equator? Is that where they actually operate?

General RANDOLPH. Yes, sir. There are satellites such as the satellite data system and the Milstar which provides polar coverage. The other satellites provide the equatorial coverage so there is a combination of both.

Mr. HILLIS. General, I am reading more and more of the Soviet effort toward destruction of satellites. I read somewhere maybe in the New York Times this morning—about lasers.

General RANDOLPH. Yes, sir.

Mr. HILLIS. Can you comment where we will be when that comes into being? How real is that threat?

General RANDOLPH. Sir, I read the same article. I will have to say that the Soviets have been working on antisatellite weapons now for 10 years at low altitude. For the past 3 years they have conducted [deleted] their antisatellite capability at best today is [deleted].

However, intelligence sources do tell us that they are working on lasers. What we are proposing to do with the Milstar spacecraft since we are talking about late 1980's capability, [deleted].

So, we are sensitive to the threat and we are requesting funds to take care of that threat.

Mr. HILLIS. You believe you can meet the threat?

General RANDOLPH. Yes, sir.

Mr. STRATTON. Don't we have limitations on what we can do in space? We are not supposed to be antagonistic to anybody in space?

General RANDOLPH. Sir, the treaty that the United States signed, I think, says that we will not put weapons of mass destruction into space. Antisatellite weapons are not viewed by the State Department as mass destructive.

Mr. STRATTON. You say we signed that with the Russians?

General RANDOLPH. I don't think it is the Russians. I think it is a treaty that was done at the United Nations; it is a multinational treaty.

Mr. STRATTON. Don't they have stuff up there orbiting that has nuclear weapons in it?

General RANDOLPH. Not to my knowledge, sir. They have nuclear power sources on their radar ocean satellites.

Mr. STRATTON. My understanding is that they are doing a lot more to utilize space as a place either in which, or from which, to conduct warfare while we just use it for communications purposes, and we are letting them get way ahead of us.

General RANDOLPH. Let me say this, sir. By way of warfare we have an antisatellite weapon program. After the Congress suggested we take a look at space-based lasers, we developed a program to do precisely that. The Secretary of Defense has signed out a long-range program for developing space-based lasers. That program is just being initiated this fiscal year. We have a request for $40 million for the next fiscal year for the Air Force to continue to pursue that program.

Admittedly that is just the beginning. You are quite correct, sir; the Soviets are very active in space and they are certainly looking at weapons.

Mr. STRATTON. I thought we were going to have a Space Lab up there from which we could control some of these activities as well. We don't have anything up there now?

General RANDOLPH. No, sir; we do not.

Mr. STRATTON. There is nothing to which the Shuttle can shuttle? I thought that was supposed to be part of the deal.

General RANDOLPH. As of right now, sir, we do not have a Space-Lab-type capability. We and NASA are in the process of looking at potentially doing that, but I have to say that we do not yet have a program that we are prepared to present to the Congress.

Mr. STRATTON. So we are going to be behind again. Thank you.

General RANDOLPH. With regard to the Shuttle and the things we are doing with the Shuttle, of course, we are using the Shuttle as our primary launch vehicle. The Titan expendable launch vehicle is backup to the Shuttle. We do use that as the primary vehicle for some of our payloads. The Atlas, which was at one time an ICBM, has been transitioned to being a space launcher and we use that for launching some of our later payloads today, such as navigational satellites and meteorological satellites.

Mr. STRATTON. The Shuttle is supposed to go between two places, Penn Station and Times Square, something of that kind, or Washington and New York. This thing just goes up and orbits the world two or three times and comes back. Isn't there any plan for it to shuttle to something or other?

General RANDOLPH. Yes, sir. As I said, we are working on that. I fully understand what you are saying, Mr. Chairman.

What we have here is a cultural problem. We have to adjust our thinking from the days of the expendable launch vehicle, which we had to put things into orbit, to a manned vehicle which has tremendous capability. We are just learning. The two successful flights have given us high confidence in the Shuttle. The March 22d flight, I hope, will add a lot more faith.

General Abrahamson, on loan to NASA, and I are working on issues that you are specifically referring to, of how to make best use of the Shuttle such as to bring things into orbit, set up a space station in orbit and to do those kinds of things of the type you refer to.

Sir, I have to say we do not yet have a program to present to you, but it is in the working stages.

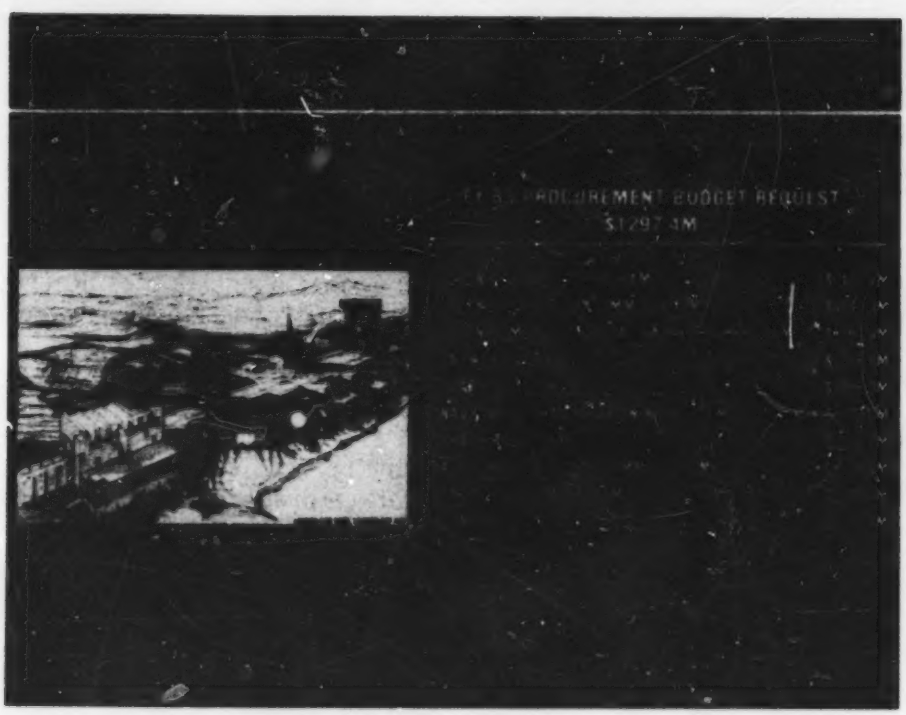
Now, the thing that we are doing in the future is that we will use the Shuttle as our primary vehicle for getting spacecraft into orbit. The question was asked earlier, what about expendable launch vehicles? We in the Air Force as DOD executive agent for the Shuttle are looking at potential expendable launch vehicles to work with the Shuttle; that is, in conjunction with the Shuttle, and to determine what is the best mix of vehicles that we have for launching vehicles into orbit.

You will see this funny looking hammerhead right here. The reason we need this kind of an approach is the fact that the Shuttle has a large bay and can carry larger diameter payloads. This new type shroud will have to be developed so that we can switch

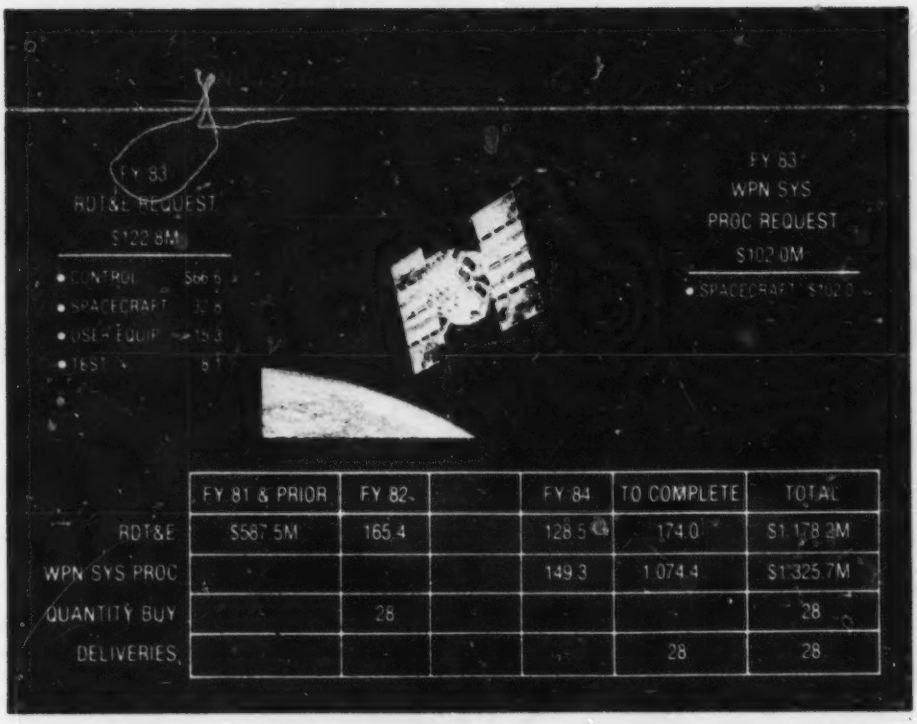
from Shuttle to expendable launch vehicles if that is necessary. Titan II's are being taken out of silos now. We will eventually use those for expendable launch vehicles for launching into space. This is a potential derivative for the Shuttle in the expendable field. That whole program is under consideration right now.

With regard to the issue of command and control and communications, I would like now to go into some specific programs that you asked for in those areas.

Talking about the early warning systems, which are part of the command, control and communications, the command center and specifically the E-4 airborne command post—I will talk a little bit about that, and then some of the communications systems that are part of the overall C^3 operation as far as the Air Force is concerned—I will begin with the Navstar global positioning system [GPS]. First, I want to show the procurement budget that we will be talking about.



These are the programs. You have these numbers in the record right now.



	FY 81 & PRIOR	FY 82		FY 84	TO COMPLETE	TOTAL
RDT&E	$587.5M	165.4		128.5	174.0	$1,178.2M
WPN SYS PROC				149.3	1,074.4	$1325.7M
QUANTITY BUY		28				28
DELIVERIES					28	28

I will begin by talking about the Navstar program. I have to say, sir, that I regret the fact we have done such a poor job of describing to the Congress how efficient and effective the Navstar system is.

Obviously, we had not properly presented our case. The total cost through the 5-year defense program for GPS is approximately $3.2 billion. That is the total cost through the 5-year defense program. You see part of those numbers right here [indicating]. The research, development, test, and evaluation program is shown, and for the weapon system procurement. This particular procurement budget that you see here, with fiscal year 1983 requests highlighted, would see the beginning of a block buy of 28 spacecraft.

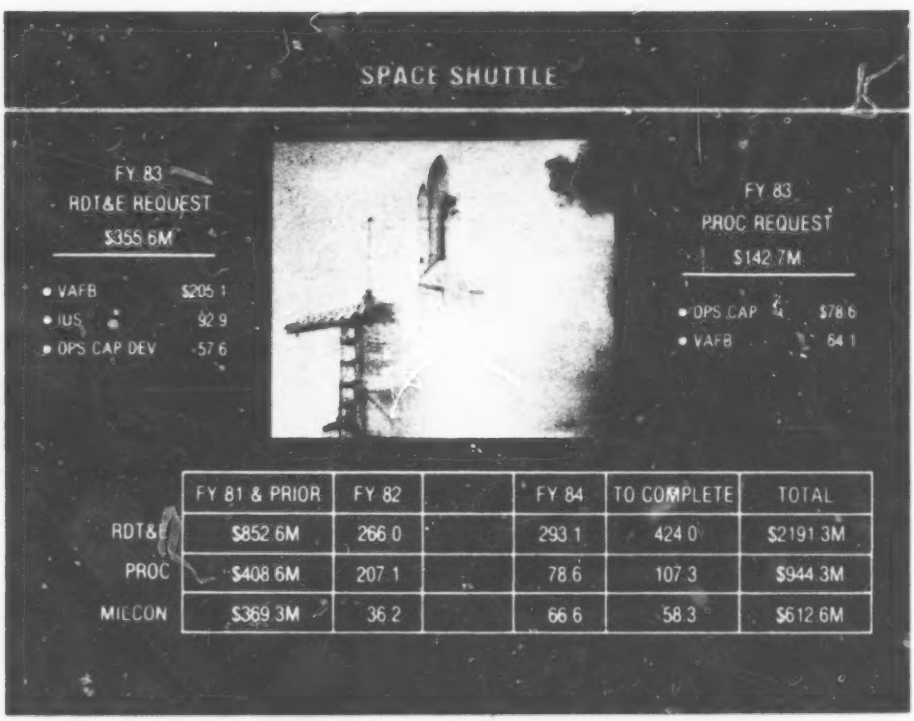
In the R.D.T & E. budget there are 12 spacecraft, so there is a total of 40 spacecraft that you see purchased in this budget.

There are 3,500 user sets in the 5-year defense program, and those 3,500 user sets, plus the research, development, test, and evaluation money of the Army and the Navy make up the remainder of the $3.2 billion costs that are associated with this particular program.

So, the service that we get from this, in our view, is in fact quite compatible with the dollars, recognizing that it is expensive. The Chief of Staff of the Air Force has gone on record to the Congress saying that this program is critical to the Air Force, as has the Chief of Naval Operations. We hope to enter into the record more data to show that this program is cost effective and survivable through the 1990's.

Also, sir, one of the things that the Congress asked us to do in the fiscal year 1982 congressional language was to consider reprograming to begin the procurement of the 28 spacecraft in fiscal year 1982. We have a $20 million reprograming effort that we are about to present to the committees for consideration as the beginning of this block buy, and the approach that we have here is to block buy the 28 spacecraft, funding termination liability in each fiscal year.

This approach would avoid the cost of about $276 million over the life of the program, as described, and we believe it is an efficient use of the funds that are available. Further, there is about $300 million in the overall program to address specifically survivability issues to be able to react to the threats that the Soviets are likely to put forth in the years as these satellites are beginning to fly. So, we think that we have a comprehensive and viable program that is, in fact, cost effective and does, in fact, provide a tremendous capability to our fighting forces.



	FY 81 & PRIOR	FY 82		FY 84	TO COMPLETE	TOTAL
RDT&E	$852.6M	266.0		293.1	424.0	$2191.3M
PROC	$408.6M	207.1		78.6	107.3	$944.3M
MILCON	$369.3M	36.2		66.6	58.3	$612.6M

The next program I would like to discuss is the Shuttle and the request that we have here. This operation's capability that you see in our total procurement request for fiscal year 1983 is specifically to provide funds to buy simulators to interface the Shuttle to the spacecraft that we are going to fly, and to provide the security necessary at the NASA Space Center at Houston, the Johnson Space Center at Houston, in order to conduct classified payload oper-

ations from Houston until such time as the Air Force is able to develop the Consolidated Space Operations Center.

Mrs. BYRON. I understand the expenditures at Vandenberg, but at Houston, that funding comes out of the Air Force budget?

General RANDOLPH. Yes, ma'am; that is correct.

Mrs. BYRON. That does not come under NASA?

General RANDOLPH. No, ma'am, not the funding that is uniquely Department of Defense funding. Those things having to do with security are specifically our responsibility. We do fund it.

Mrs. BYRON. Does DOD have responsibility for the security aspect of that program?

General RANDOLPH. That is correct. I should point out that is an interim capability until such time as we are able to field our own control center, hopefully in the Colorado Springs area.

Mr. STRATTON. What national security operations is the Shuttle doing now?

General RANDOLPH. Sir, the Shuttle will launch most of our payloads. [Deleted.]

Mr. STRATTON. Meaning satellites?

General RANDOLPH. Yes, sir, the satellites.

Mr. STRATTON. $122 million strikes me as a lot of money. There will be another two flights this coming year and this will cost us $122 million?

General RANDOLPH. No, sir. This is to establish the capability to be able to conduct the DOD launches on out well into the year 2000. We are establishing that capability with the request that you see here.

Mr. STRATTON. How are we establishing it? The Shuttle is operating, is it not?

General RANDOLPH. Yes, sir, the Shuttle is operating, but we need to, first of all, establish interfaces with the Shuttle.

Let me briefly describe how it works: For those payloads that will be put into high orbit we have to have an inertial upper stage which is mated to the spacecraft and all that is put into the bay of the Shuttle. The Shuttle then lets the payload and the inertial upper stage off at about 200 nautical miles, and then the inertial upper stage will boost that into the higher orbit.

On those spacecraft that we operate at low orbit, the Shuttle will take it to the lower orbit 200 or 300 miles and let the payload off, and it will then maneuver itself into the proper position.

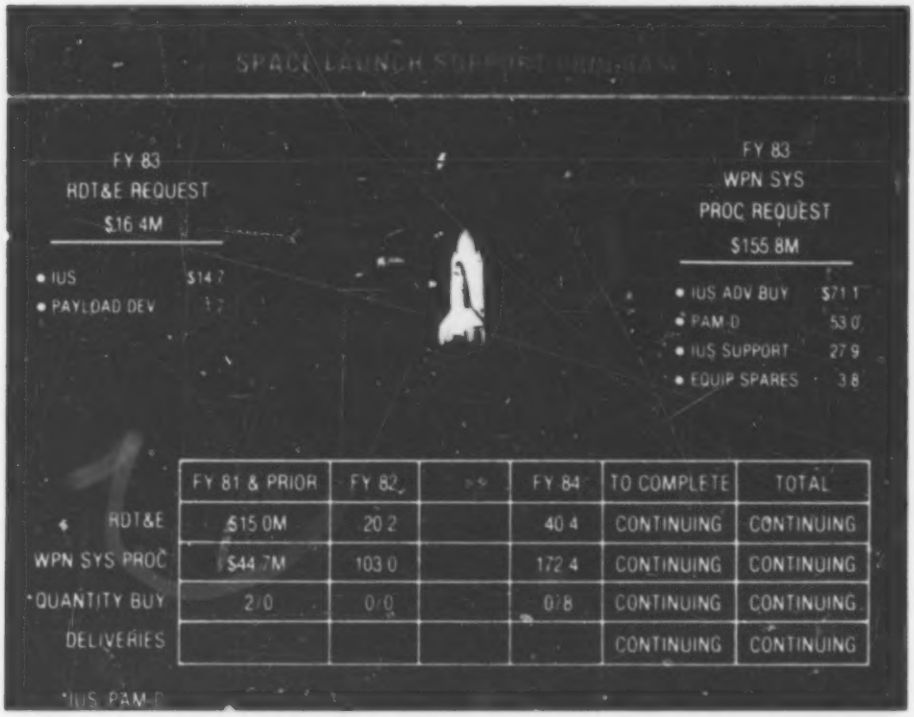
So, the Shuttle right now is the basic vehicle for getting all of our payloads into orbit.

Now, in order to work with the Shuttle, we have to meet all of the safety requirements; we have to make sure our payloads can withstand the environment in the bay of the Shuttle, which is quite difficult for the spacecraft. We have to be sure that all of the interfaces are done properly. It is quite a complex undertaking in order to be prepared to use the Shuttle.

Mr. STRATTON. Who is doing the actual work?

General RANDOLPH. We are doing that work ourselves. NASA's job is specifically to develop the Shuttle, itself. That is it. Then we are working with the NASA people and providing the funds to do all of those things necessary to launch DOD payloads into orbit.

We have a good, close working relationship with NASA to prevent duplication, but there are things that we need to do in order to make sure that our payloads are prepared to make full use of the Shuttle.



In addition, there is a line called Space Launch Support, that is, the Shuttle development, launch support line. In this line we buy the Intertial Upper Stage and do the work for the Inertial Upper Stage.

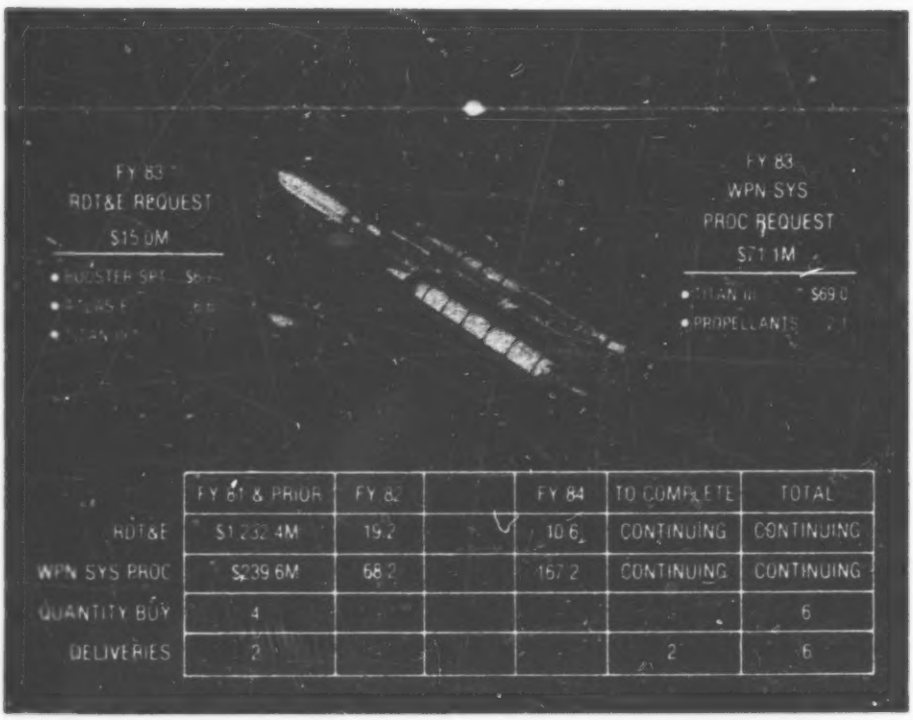
I should point out to you that our record in controlling costs with the Inertial Upper Stage is dismal at best; we have not done a very good job in maintaining cost control in that particular program. One of the things that we are doing, of course, is taking a look at other things that we can do to make sure that the costs are under control; but technically the IUS is doing quite well.

Now, the situation with regard to the IUS is as follows: This line here is to buy those Inertial Upper Stages. We had planned to buy two of those in fiscal years 1979 and 1980. Those were fully funded and the money was appropriated by the Congress for $22 million per copy. As the program progressed, the price tag increased dramatically and currently the price tag for an Inertial Upper Stage is now $55 million a copy. In order to actually afford those two upper stages, we are going to have to come back to the committee and request a reprograming in fiscal year 1982 of $67 million in order to buy those two upper stages.

We propose to buy four upper stages with the request that you see in 1983, although the number says five. In accordance with the congressional mandate, those spacecraft which are R. & D. spacecraft, must be launched using R.D.T. & E. money, and one of those five is going to be purchased with R.D.T. & E. money, incrementally funded, which is why you see only $16 million in that particular fiscal year.

In addition, our request for 1983 includes not only the Inertial Upper Stage but also the Payload Assist Module, which is a commercial small booster to launch small payloads such as Navstar into orbit. That will buy 10.

In addition to that, there is the Inertial Upper Stage support cost, the number you see here, plus spares. That is our program as far as the IUS is concerned.

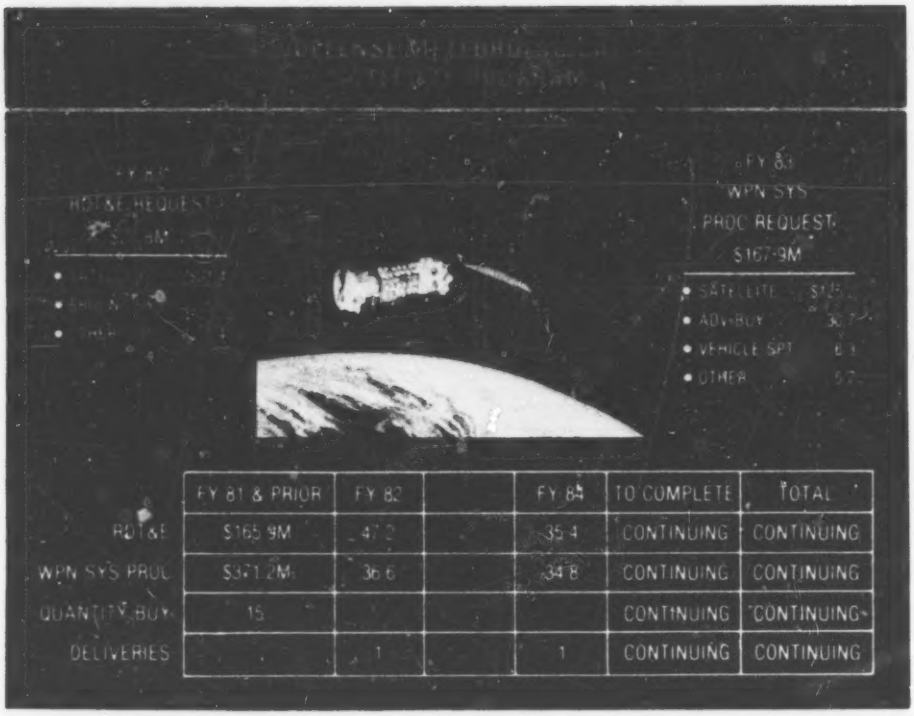


	FY 81 & PRIOR	FY 82		FY 84	TO COMPLETE	TOTAL
RDT&E	$1,232.4M	19.2		10.6	CONTINUING	CONTINUING
WPN SYS PROC	$239.6M	68.2		167.2	CONTINUING	CONTINUING
QUANTITY BUY	4					6
DELIVERIES	2				2	6

In addition to that, we do have a few expendable space boosters available. These expendable boosters are shown here. The fiscal year 1983 request in addition to a small amount of R.D.T. & E. money for fleetwide reliability and improvements, includes an advance buy of two Titan III's, the number you see here. If the decision is made to press on and buy those two Titans, then we would need the funds you see here in 1984 to actually complete the full funded buy of the two Titan expendable launch vehicles.

We are in the process of discussing right now whether we should have a mixed fleet or not. If the mixed fleet is, in fact, the way the

Air Force would like to go, we will request that money as shown in fiscal year 1984.



	FY 81 & PRIOR	FY 82		FY 83	TO COMPLETE	TOTAL
RDT&E	$165.9M	47.2		35.4	CONTINUING	CONTINUING
WPN SYS PROC	$371.2M	36.6		34.8	CONTINUING	CONTINUING
QUANTITY BUY	15				CONTINUING	CONTINUING
DELIVERIES		1		1	CONTINUING	CONTINUING

For the defense meteorological satellite program, the weather satellite, the request is as shown here. It is our proposal, sir, to buy four of these in a multiyear buy for these spacecraft. We will fully fund two of those in fiscal year 1983. We would request an advance buy for two additional spacecraft in 1983 to actually be fully funded in fiscal year 1985.

Following that procedure, we will avoid a cost of $49.2 million as far as the cost savings are concerned.

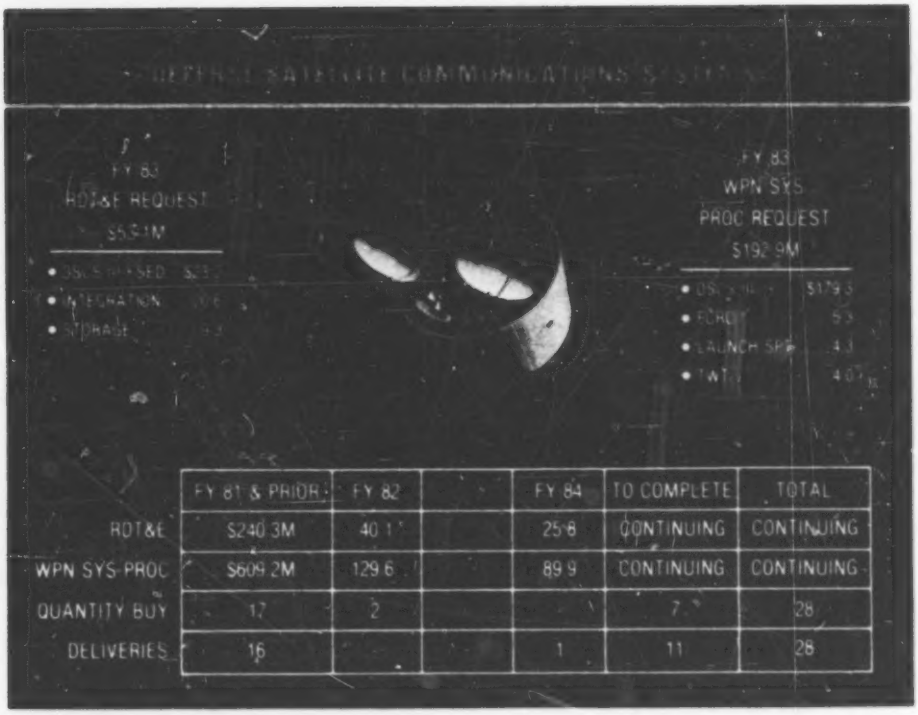
Then the delivery of these vehicles that would be purchased here would actually not occur until 1986 and beyond. The remainder of the requests has to do with some secondary sensors and some additional support for the purchase of the spacecraft.

In the area of our [deleted] Defense Support Program, our fiscal year 1983 procurement request also includes two spacecraft and these are the improved spacecraft.

The purpose of these spacecraft is to provide additional survivability. We will for the first time use [deleted] through space; therefore, we have better access to the data around the world.

These are the spacecraft [indicating on chart]. The sensors are built separately; nevertheless, those are the sensors that are required for these programs and additional support as shown.

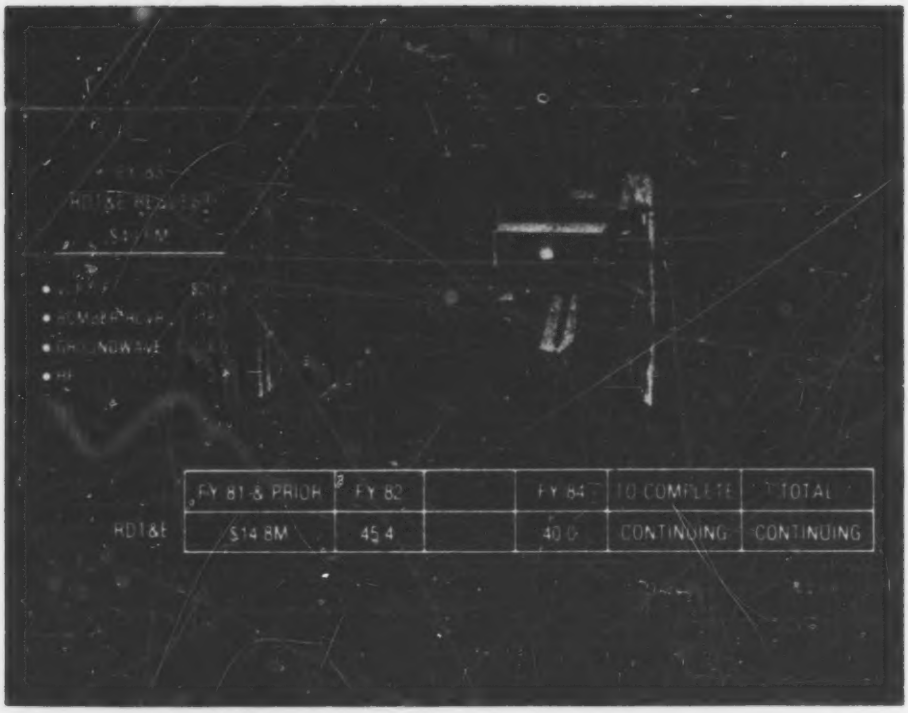
We propose to buy two other spacecraft in this program in fiscal year 1984. This was previously approved by the Congress in fiscal year 1982 and that avoids the cost of about $65 million by following this particular procedure.



	FY 81 & PRIOR	FY 82		FY 84	TO COMPLETE	TOTAL
RDT&E	$240.3M	40.1		25.8	CONTINUING	CONTINUING
WPN SYS PROC	$609.2M	129.6		89.9	CONTINUING	CONTINUING
QUANTITY BUY	17	2			7	28
DELIVERIES	16			1	11	28

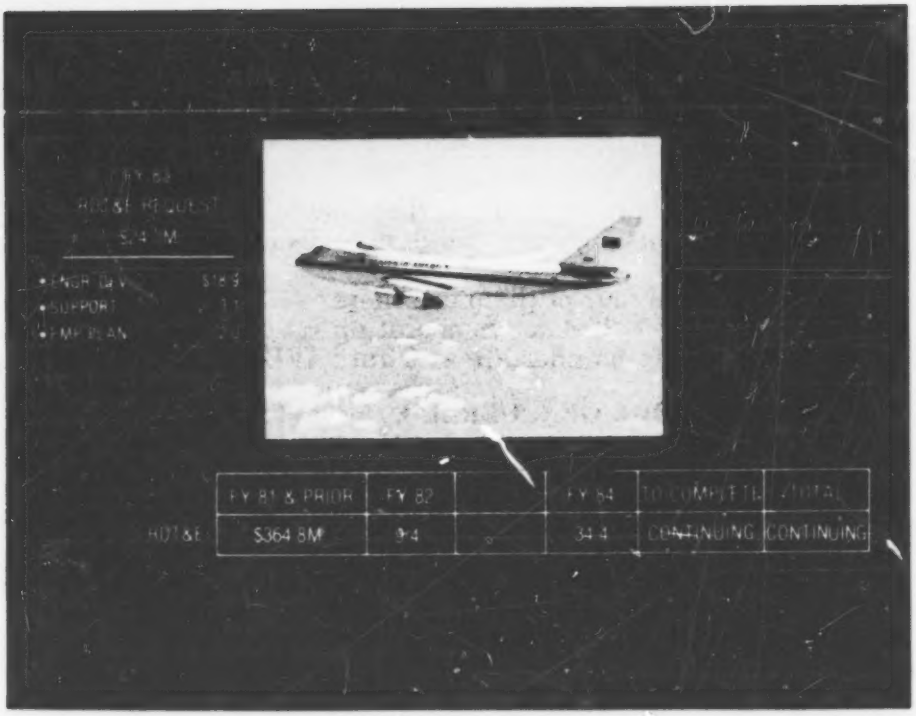
On the Defense Satellite Communications Systems, we have a request in this program for two of the communications satellites, as is shown here. As you may recall, we have had some cost difficulties with this program. The reason for that is because of the difficulties we had during the developmental phase. Those difficulties are now behind us and we do have the program under control cost wise, and we do have firm quotes from the contractors which work along these lines.

I should point out that you see a rather significant increase in the two spacecraft which you approved in fiscal year 1982. The reason for the difference in the cost is not a cost increase in the spacecraft but the difference has to do with the fact that we purchase long-lead parts prior to that point.



You mentioned the Minimum Essential Communications Network, MEECN, earlier. That is really a Department of Defense wide network, Admiral Nagler spoke of that portion with which the Navy is involved. Although we only show R.D.T. & E. money here, I do want to point out the fact that we have this because we will be requesting procurement funds in fiscal year 1984 associated with some of the work that is ongoing in research and development in fiscal year 1983. This is the area in which that R.D.T. & E. is going on.

Improvement in very low frequency low frequency [VLFLF] for the airborne command post, placing VLFLF receivers on the bombers to assure connectivity, particularly in the polar region, new groundwave communications system for high survivability at the same frequency and, finally, a small amount of work in the high frequency area.



You also asked us to discuss a little bit the Advanced Airborne Command Post. I show here only R.D.T. & E. money. There is aircraft modification money in fiscal year 1983 which is approximately the same number as the R.D.T. & E. money that you see there.

I should want to point out the fact there is a small amount of R.D.T. & E. in progress but the three airplanes are basically under contract now for conversion from the E-4A version to the E-4B. Engineering and development are to do some superhigh frequency improvement. This dome here covers the superhigh frequency antenna associated with that program.

Mr. KLEIN. General, with respect to the schedule for taking these things out of service, how long will they be out of service during the modification period?

General RANDOLPH. I don't know the answer to that. I will have to check that for the record. It appears that it is on the order of about 18-20 months, but I will have to check that to be sure.

Mr. KLEIN. We have one at Andrews here and we have one at Offutt?

General RANDOLPH. Yes, sir, normally one aircraft on alert at Andrews.

Mr. KLEIN. Then we have one that follows the President around wherever he may go?

General RANDOLPH. That is correct.

Mr. KLEIN. So that leaves you no backup whatsoever while the one aircraft is out of service for modification?

General RANDOLPH. That is correct; it makes the fleet very, very thin. That is an accurate assessment.

Mr. KLEIN. Thank you.

Mr. STRATTON. Doesn't the one at Andrews follow the President when he goes? What do they do when the President goes abroad?

General RANDOLPH. The current administration follows the policy that the E-4 goes with him.

Mr. STRATTON. E-4 goes with him?

General RANDOLPH. Yes, sir.

Mr. STRATTON. Where do we have them based?

General RANDOLPH. They are based at Andrews and at Offutt Air Force Base.

Mr. STRATTON. All four of them are there?

General RANDOLPH. E-4 main operating base is at Andrews on primary alert. The remainder are at Offutt AFB.

STATEMENT OF BRIG. GEN. GERALD L. PRATHER, USAF, DIRECTOR, COMMAND, CONTROL AND TELECOMMUNICATIONS, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PLANS AND OPERATIONS, DEPARTMENT OF THE AIR FORCE

General PRATHER. There are a couple of points we need to make. When the E-4 goes into modification we use our current EC-135 airborne command post fleet to back that up. It also has a communications suite on it; although more limited than the E-4, it can do the job of the National Emergency Airborne Command Post. It is the SAC Airborne Command Post.

When the President goes, for example, for his vacation on the west coast, an E-4 goes with him. Once he has established communications on the ground, we base it at the nearest Air Force Base to his location, wherever that may be.

During the airborne time when he is transiting from here to wherever he is going, we either have mobile ground entry points to enter the communications network on the ground, or we have the connection via radio wave communications to him when he is over the ocean or in some place where he can't reach one of those ground entry points.

Mr. STRATTON. What about when he goes to Europe?

General PRATHER. When he goes to Europe he has the National Emergency Airborne Command Post accompanying him. It is placed in a similar scenario as it is here in the States.

Mr. STRATTON. I thought one of the reasons we had Air Force One was that the President would have all of these communications available to him?

General PRATHER. That is right. He has a package of communications on board Air Force One to maintain communications with either the National Emergency Airborne Command Post or the National Military Command Center here in the States, or through communications at some ground entry point back to the National Military Command Center.

Mr. STRATTON. On top of that, we have a couple of C-135's carrying his armored cars and all the rest, don't we?

General PRATHER. No, sir. Normally speaking, what we do is make arrangements for his overseas trip to have the transportation and communications connectivity available at the location where he will land.

Mr. STRATTON. I know, but the armored car is flown wherever he goes?

General PRATHER. I would prefer that the White House answer the question as to his support, sir.

Mr. STRATTON. I know, but it is the Air Force that is doing it; they don't drive over the ocean.

General PRATHER. If there are requests for transportation for those vehicles, our Military Airlift Command provides that support, yes, sir. That request comes directly from the White House.

Mr. STRATTON. I never realized that this plane flew all around; it raises some interesting questions.

Mrs. BYRON. Can we get back to the original point? You said you have four of those aircraft. You are getting ready to put one in an 18-month period of upgrading?

General PRATHER. Yes, ma'am.

Mrs. BYRON. That leaves you three. One is at Andrews, on permanent basing; one of them follows the President wherever he goes; and the third one is out at Offutt; am I correct?

General PRATHER. The primary mission aircraft are on alert at Andrews normally. There are rotational aircraft that are based at Offutt, the SAC Headquarters. The accommodations are there for the E-4 and it is the main operating base. That is primarily there for providing an inland base for the E-4 to provide more survivability; but, the primary alert mission is at Andrews Air Force Base.

Mrs. BYRON. It is deployed there on a fairly substantial rotating basis, one of the four aircraft in that vicinity?

General PRATHER. That is correct.

Mrs. BYRON. So you take one out of service for an 18-month period; then you have one that will be in the vicinity of Offutt; then you will have the two at Andrews. If you have a problem with one of them, one goes down, we are running short?

General PRATHER. That is right. Now, we have the aircraft on permanent standby at Andrews. If something happens to that bird on alert, the next one is put out on standby alert at Offutt within approximately 15 minutes. If that one goes down also, then a third one at Offutt could cover within a short period of time.

This continues until the point that we lose all of our E-4's, then we have our SAC Airborne Command Post, which is continuously airborne. We also have a backup EC-135 at SAC Headquarters and another at Langley that can be launched immediately toward Andrews if we lose all the E-4's; so, given that we have an alert on the ramp at SAC, if something happens to the E-4's we will have an EC-135 to back it up.

Mr. MCCURDY. If we lose all those, we had better kiss it goodby, if it is at that stage?

General PRATHER. Obviously, our thought is that that will never happen. The question arises, as a result of the modification schedule we will go down some in capability, but we will have those EC-135s as backup. There are 24 EC-135's.

Mr. STRATTON. What does this thing do that Air Force One can't do, or that the EC-135 can't do? I can't help but feel that we are gilding the lily a little bit here. I have been one who has always said that we did not have any waste in the Pentagon. It looks to me as though we are really going a little bit overboard. You don't even

have an AWACS capability. Maybe we ought to have an AWACS capability there, too. The President has to decide whether to push the button or not push the button. Why does he have to have all this other stuff?

General PRATHER. Let me say that if we did not have an E-4 for the National Emergency Airborne Command Post, we would have some other aircraft. We opted to buy six E-4's——

Mr. STRATTON. You have not answered my question. What is it that it provides that you don't have in the communications that Air Force One has? The President also carries the black box around with him. If we have a nuclear war, he can give the appropriate code words. What more do you need than that?

General PRATHER. What the E-4 provides is a total battle staff capability, total advisory capability, to whoever is the surviving National Military Command Authority. Whoever is launched in that E-4 has a battle staff to support him; it provides the communications capability, automation capability, long haul and short haul, and it provides electromagnetic protection that is not provided in Air Force One or some of the other aircraft. It provides a war-fighting capability that is not provided by Air Force One. It provides that battle staff to assist him, given that he has launched it in a wartime situation.

Obviously, a black box goes with him wherever he goes; however, given that there is the philosophy that the war is going to continue beyond the first strike capability, you need that command center and that command support in order to continue to maintain the war-fighting capability throughout a spectrum of conflict wherever that is.

The E-4 is designed to provide national command authority that capability to control the war throughout a spectrum of a conflict. It is not provided in his normal travel aircraft. That is primarily for people transportation.

General RANDOLPH. This capability is really the only surviving command post capability that we have. This is an adjunct to the TACAMO and to the CINC Command Post.

Mr. STRATTON. We have all kinds of command posts underground. We have a lot in Fort Ritchie. We have them out in NORAD, haven't we? We are not destitute.

General RANDOLPH. If it comes to the nuclear war——

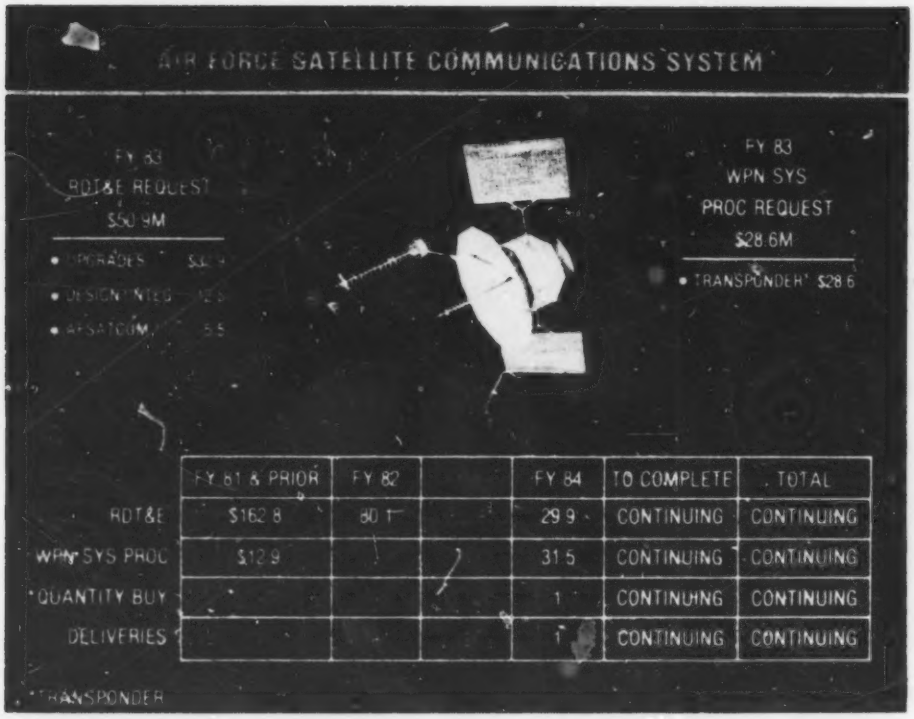
Mr. STRATTON. Even the E-4 might go. Well, I don't want to hold it up. I never gave it this much thought before, but it seems to me as though we are laying it on just a little too heavy.

General PRATHER. I think perhaps we may need to give you some more detailed information on our command and control center capabilities.

Mr. STRATTON. You don't give us anything unless we ask for it.

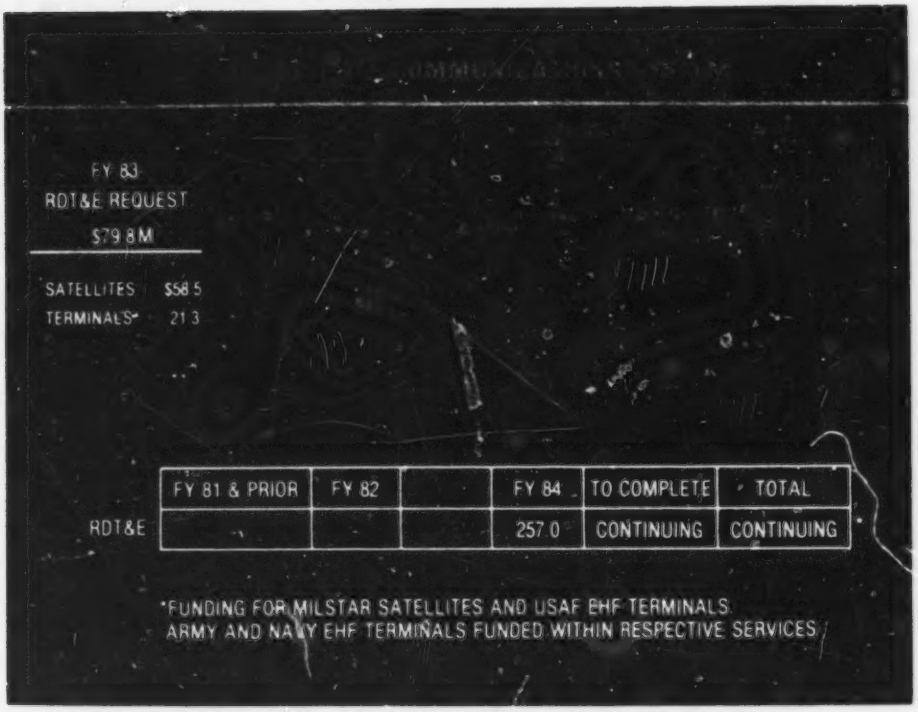
General PRATHER. I suggest if that question is still in your mind, however, that you may want to request some additional information on survivable command centers.

Mr. STRATTON. Thank you very much.



General RANDOLPH. I have two more charts to go.

This one has to do with the Air Force Satellite Communications System. I would like to point out these are the transition radios that will be put on host spacecraft as we bridge the gap between the FLTSAT's satellite data systems and the new Milstar program which we are just initiating this fiscal year.



On this chart the reason we didn't show a picture here is that we just signed a contract to begin the initial development. That is the survivable communications system which has the extremely high frequency capability to provide antijam and physical survivability necessary to withstand the threats in the late 1980's and early 1990's.

Sir, that concludes my discussion.

General Bowden has some additional information in the other procurement areas, or I am prepared to answer questions, whichever you prefer.

Mr. STRATTON. We have one question for you here. You are going to phase out the Titan II missiles over the next few years. We understand that Titan II will be a viable booster for defense payloads. What plans does the Air Force have to preserve the best Titan missiles or boosters as primary or backup boosters for defense satellites?

General RANDOLPH. We are in the process now, sir, of working the details of that. We have taken a look at those boosters. Obviously, they are in very good condition. It is our intent to use those as a space launch capability. What we are now doing is discussing the cost of doing that and the tradeoffs associated with the lower reliability of the booster versus the Shuttle, although it is clear to us that that is a viable space launch capability and we intend to take advantage of that.

WRITTEN STATEMENT OF BRIG. GEN. BERNARD P. RANDOLPH

Mr. Chairman and members of the subcommittee, I am pleased to appear before you today to continue a series of hearings on the Air Force aircraft and missile procurement programs. Yesterday Lt. Gen. Kelly H. Burke described the Air Force programs for strategic offense and theater nuclear forces. Today, I will focus on space and command, control and communications (C^3) programs. Airlift and tactical air programs will be presented in later sessions. Details of these and related programs are contained in Gen. Burke's prepared statement and the Congressional justification materials which support the entire series of hearings.

Since my Air Force duties include responsibilities for development and acquistion of both command, control and communication systems and space systems, with your permission I would like to use briefing aids to present first an overview of Air Force objectives in these areas and then information on specific programs as requested by the Committee. The specific programs which I am prepared to address are Shuttle/IUS, Boosters, DMSP, GPS, AFSATCOM, E-4, MEECN, DSCS and Colonel Fornell is prepared to address the AWACS and TR-1 programs that the Committee also requested.

I. SPACE

Because our space systems have unique capabilities, they can perform many missions more efficiently than earthbound systems. Therefore, effective military operations on the modern battlefield increasingly depend on spaceborne surveillance, warning, communications, meteorological, and navigation support.

The Soviets are well aware of the military utility of operating in space and have committed significant resources toward a sizable space presence. Over the last decade, Soviet space launches have significantly exceeded those of the U.S., with the majority of their launches being for military purposes. The Soviets are supporting an active man-in-space program, and they have deployed and continue to test an operational antisatellite capability.

In contrast, we are concentrating our efforts on doing more with each launch by deploying satellites with multiple missions and with much longer operational life. To optimize our deployment and on-orbit capabilities, we are developing a new space launch capability, improving our space operations capabilities, and aggressively pursuing advanced, space-related technology.

The Nation's new space launch capability—the manned, reusable Space Shuttle—is being developed by the National Aeronautics and Space Administration (NASA), with extensive Department of Defense (DOD) participation. The Shuttle provides major new capabilities and offers the potential to revolutionize our operations in space. We are taking the necessary actions to transition our spacecraft from expendable launch vehicles to the Shuttle and are carefully analyzing how we can use the unique capabilities offered by the Shuttle to enhance our mission effectiveness.

The Air Force, as the DOD executive agent for the Shuttle, has several crucial responsibilities. We are developing and producing the Inertial Upper Stage (IUS), which provides the capability to deliver spacecraft from the Shuttle parking orbit to higher orbits. We are also responsible for the development, construction, and operation of the West Coast Shuttle launch and landing facilities at Vandenberg AFB, California. Polar and near polar launches will be conducted from Vandenberg AFB in support of all Shuttle users—civil as well as military. In addition, we are working with NASA to modify their existing facilities and equipment to meet unique defense requirements.

The Space Launch Support program funds DOD Shuttle operations costs and the orbital flight charge reimbursement to NASA and procures the IUS and Payload Assist Modules Delta class (PAM-D) for all Air Force space programs. Beginning in fiscal year 1983, the IUS procurement approach will be changed from annual fully funded basis to a consolidated (Air Force, other DOD, NASA) eight vehicle buy every two years. This approach was adopted to reduce material and manufacturing costs.

The importance of our space assets to national security makes it essential that we maintain our current space booster capability during the transition period to Shuttle. This backup capability will protect against delays or any unanticipated problems while bringing Shuttle to an operatonal status. These efforts are being supported by our Space Boosters program. The program strategy is to maintain the critical Titan III production base until the Shuttle's ability to support DOD missions is demonstrated.

Two major satellite programs included in the Space mission area are the Defense Meteorological Satellite Program (DMSP) and the Navstar Global Positioning

System (GPS). DMSP satisfies our need for accurate and timely weather data, which is vital to successful military operations. DMSP, an operational advanced weather system, is DOD's most important single source of weather data. Our procurement program involves acquisition of replacement satellites, launch systems, and special sensors.

Successful military operations also require a knowledge of the location of force elements. We are developing Navstar GPS to meet this requirement by providing users in all services with precise position information ona 24-hour, global basis under all weather and visibility conditions. This capability will significantly enhance the mission effectiveness of all U.S. forces. In addition, the system holds real promise for numerous civilian applications. GPS satellites will also play another vital devense role by being hosts for Integrated Operational Nuclear Detonation Detection System (IONDS) payloads. IONDS will provide damage and strike assessment information, thereby enhancing strategic force management. Very accurate global detection and reporting of nuclear detonations will be available for the first time when this system is deployed.

II. COMMAND, CONTROL, AND COMMUNICATIONS

Command, control, and communications (C^3) systems are essential to implement strategy, control forces, and employ weapons in modern warfare. These systems support day-to-day operations, provide time-critical warning information to decision makers, facilitate accurate situation monitoring and allocation of resources in crisis situations, and permit the appropriate and effective employment of military power in wartime. Recognizing our dependence on C^3, the Soviets place heavy emphasis in their doctrine on the disruption of C^3. The threats include both physical and electronic attacks.

In response to this growing threat, our primary objective is to increase the survivability, security, and jam-resistance of our C^3 links. Another objective is to improve both the reliability and interoperability of our systems. Finally, we want to exploit new technologies to more effectively meet future threats and satisfy our C^3 requirements.

One of the key features of the President's strategic program is the modernization of strategic C^3. For deterrence to be a successful strategy, we need effective strategic C^3 systems to support the employment of our nuclear forces. In the past, we have not modernized our C^3 systems fast enough. As a result these systems have insufficient survivability and reliability to operate reliably over an extended period following a Soviet attack. Consequently, we are increasing the survivability and endurance of our strategic C^3 systems. Our objective is to make these systems as strong as the forces they support.

A primary program for command and control of our strategic forces is the Air Force Satellite Communications (AFSATCOM) System. The AFSATCOM system consists of aircraft terminals, ground terminals, and communications packages on several satellites, including the Fleet Satellite Communications (FLTSATCOM) System, Satellite Data System (SDS), and classified host spacecraft. We are installing AFSATCOM terminals in strategic bombers, reconnaissance and surveillance aircraft, ground and airborne command centers, and missile launch control facilities. The Army and Navy are also acquiring terminals. For fiscal year 1983, we are requesting procurement funds for an AFSATCOM communications package to be integrated on host spacecraft to ensure continuity of communications in critical geographic areas.

For the future, we are developing a new satellite communications system called MILSTAR to fulfill the urgent need for highly jam-resistant and survivable satellite communications. MILSTAR will feature increased jam-resistance through the use of extremely high frequency (EHF) communications and increased survivability through a variety of techniques. It is a joint Army, Navy, Air Force program which will support both strategic and tactical users.

The E-4 is a survivable extension of the fixed command centers and provides high confidence in our ability to manage strategic forces during a nuclear war. We are developing several improvements to these airborne command posts: SHF and ultra high frequency (UHF) satellite communications terminals, a high-powered very low and low frequency (VLF-LF) terminal, improved communications processing, electromagnetic pulse (EMP) testing, and integration of terminals for on-board processing of IONDS data. These systems have anti-jam features and will support operations in a nuclear environment over extended ranges.

Our fiscal year 1983 aircraft modification program includes procurement funds for installing automatic data processing equipment to improve the E-4B battle staff's

ability to provide critical and time sensitive information to the National Command Authorities.

The MEECN program contains three key projects: VLF/LF Improvements, Adaptive High Frequency/Very High Frequency (HF/VHF), and the CONUS Groundwave Network. VLF/LF Improvements provide for improved dissemination of war orders via the secure VLF/LF system and the development of a small VLF/LF receiver for bomber aircraft. Adaptive HF/VHF will provide a modular family of radios which will improve the reliability of two-way communications in a nuclear or jamming environment. The CONUS Groundwave Network project develops a grid of unmanned, EMP hardened, jam-resistant relay communications nodes which will be collocated with existing commercial broadcast towers where feasible.

DSCS provides unique and vital national security communications for worldwide military command and control, crisis management, intelligence and early warning data relay, treaty monitoring and surveillance information, and Presidential and diplomatic traffic. Our remaining DSCS R.D.T. & E. task is to develop DSCS III satellites. DSCS III will provide increased capacity, flexibility, and electronic counter-countermeasure capability. In support of strategic forces, they will also include a UHF/SHF capability for emergency war order dissemination and force execution. The DSCS procurement program provides for replacing DSCS II satellites with DSCS III. Two DSCS III satellites will be procured in fiscal year 1983.

III. OTHER STRATEGIC DEFENSE

The Defense Support Program is a key element of our Nation's strategic defensive posture. This program provides data to the National Command Authorities, North American Aerospace Defense Command, and Strategic Air Command. Our development efforts are aimed at increasing the survivability of operational data through the development and deployment of truck-mounted Mobile Ground Terminals, improving the performance and life expectancy of follow-on satellites, and ensuring that follow-on satellites are compatible with the Space Shuttle. To maintain the operational capability of this vital system, new satellites must be procured to replace those that have failed, worn out, or are unable to meet the growing threat. To meet near-term requirements, four more DSP satellites are being procured, two in fiscal year 1983 and two in fiscal year 1984.

This concludes my statement. If there are no questions at this time, I will proceed with my briefing on the Air Force role in Space.

Mr. STRATTON. Any other questions?

General Bowden.

STATEMENT OF BRIG. GEN. WILLIAM BOWDEN, USAF, DEPUTY DIRECTOR OF LOGISTICS, PLANS AND PROGRAMS, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR LOGISTICS AND ENGINEERING, DEPARTMENT OF THE AIR FORCE

General BOWDEN. Yes, sir.

Sir, I am very pleased to appear before this subcommittee. With your permission, I would request that I submit my statement for the record and other additional information that you have before you, and I will verbally summarize my statement and then I have some viewgraphs to show you on our Other Procurement program for the Air Force.

Mr. STRATTON. Without objection, that will be done.

General BOWDEN. Sir, the Air Force Other Procurement program has four basic categories. The first is electronic and telecommunications, which the strategic communications is contained within, and I will be discussing the strategic communications more in detail.

In the electronics and telecommunications area we are talking about equipment that ranges from hand-held radios up through large surveillance radars that operate with much of the equipment which General Randolph previously described.

The second program that we have in the Other Procurement is munitions. We are talking about our war reserve material munitions. We are talking about conventional bombs. We are talking about bullets. We will be presenting this testimony as time goes on to other committees.

Another category that we have in the Other Procurement appropriation is vehicles. We are talking about not only the passenger vehicles and vans but also vehicles like firefighting equipment and material handling equipment that go with our wide-bodied cargo aircraft.

The fourth category that we have in the Other Procurement deals with other base maintenance and support equipment, and of primary interest in this category is the mobility or bare base equipment that supports forces such as the Rapid Deployment Force, many other equipments in this category, like the test equipment and depot maintenance equipment that we have in our Air Logistics Centers at places such as Oklahoma City Air Logistics Center.

Specifically in the Strategic Communications, I will want to summarize for you in my viewgraphs information on four categories; that is, strategic defense, command and control, space operations, and then other areas that contain some logistics requirements, and training equipments such as radar bomb scoring sites for SAC bomber crews.

Sir, this concludes my opening summary. With your permission, I would like to show you a series of about six or seven slides, plus some pictures of these kinds of equipments that I have briefly alluded to.

WRITTEN STATEMENT OF BRIG. GEN. WILLIAM P. BOWDEN

Mr. Chairman and members of the committee, I appreciate the opportunity to discuss with you the Air Force, Other Procurement Appropriation, and in particular, the fiscal year 1983 budget request. My specific purpose is to describe the strategic communications and electronics portion of the total program. As a matter of interest, this is the first year the Other Procurement Appropriation will be reviewed in total by both Armed Services and Appropriation Committees.

With your permission, I will begin my presentation by reading a short statement that describes the total appropriation and identifies highlights of our fiscal year 1983 strategic communications procurement. A more detailed description of these programs will be provided for the record. I will conclude with a short viewgraph presentation which shows the allocation of the dollars by budget program and then several key examples of our strategic communications programs.

The Other Procurement Appropriation consists of four separate budget programs: munitions, vehicular equipment, electronics and telecommunications equipment, as well as other base maintenance and support equipment. Also included within the appropriation are the classified Selected Activities and Special Update programs which can be covered as the Chairman desires in a separate session. Excluding the classified programs, the fiscal year 1983 Other Procurement request is $3.1 billion.

First, the munitions program buys conventional munitions, firearms, and armament training equipment. The majority of the dollars are needed to fill our woefully deficient war reserve bombs and bullets inventories. Second, the vehicular equipment program includes these examples: aircraft towing tractors and refuelers, firefighting and flightline trucks, bulldozers, forklifts, and wide body loaders. The third program, electronics and telecommunications, is aimed at modernizing ground communications systems. Telecommunications equipment improvement means buying a capability ranging from hand-held radios to large surveillance radars. The final budget program, other base maintenance and support equipment, provides for a wide variety of support equipment needed for readiness and sustainability. We must buy cargo pallets and nets, generators, automated warehousing systems, austere base mobility equipment, and precision measurement and test equipment. Addition-

ally, all four budget programs include funds for spares, repair parts, and modifications.

This concludes my description of the total Other Procurement Appropriation. Now I will briefly describe the strategic communications procurement program. I emphasize that the equipment procured in this program is for ground application only and much of it operates in support of the space equipment described earlier today.

Strategic communications gives us rapid, accurate, and reliable strategic information to our national command authorities and key military decision-makers. We refer to our strategic C^3. It consists of sensors, data processors, and communications that connect the national command authorities with the nuclear strategic forces.

The fiscal year 1983 strategic communications procurement program budget request is $535 million. For review purposes, we have broken the program into four categories: strategic defense; command and control; space systems; and other, a category which includes logistics support, training equipment, and Air Base Ground Defense equipment.

The strategic defense category buys improvement in our ability to detect and warn of enemy aircraft and missile launches. Strategic defense includes radar and sensors to track objects orbiting in space. The command and control category procures systems which provide early warning, assessment and information to and from military commanders and the national command authorities. The space systems category consists of those ground communications facilities required to support space and missile test ranges such as Kennedy and Vandenberg, satellite control, and space shuttle operations. Communications security equipment is also included in this category. The final category provides spare parts, combat crew training equipment, and air base physical security sensory and detection equipment.

If there are no questions, I would like to conclude my presentation with a brief overview of the Other Procurement Appropriation and the strategic communications program.

Mr. STRATTON. Let me just ask a question before you do that, General.

You have said that you have logistics responsibility and that includes firefighting equipment at Air Force bases. Are these the Air Force bases that are just associated with these airborne systems, satellite systems, or all of them?

General BOWDEN. This is all of the bases that the U.S. Air Force has around the world, sir. We are talking about firefighting equipment for Vance Air Force Base, Tinker Air Force Base, Little Rock Air Force Base, and so forth. It is normal firefighting equipment, support equipment for all of our bases.

Mr. STRATTON. Is it true that your firefighting equipment specifications are always geared so that Oshkosh will win the competition? I have heard that charge made.

General BOWDEN. No, sir; it is our point of view that we are competitive in this arena, sir.

Mr. STRATTON. I beg your pardon?

General BOWDEN. We are competitive. That is our policy.

Mr. STRATTON. Are they the ones that always end up getting it? What other companies provide firefighting equipment?

General BOWDEN. Just a minute, sir. If I could ask one of my people here—I do not have those specifications with me—if I might ask my action people, I might get that answer for you.

We do not have that information, sir. I will have to provide it for the record.

Mr. STRATTON. I would like to have you provide it to me, if you would, as soon as possible.

General BOWDEN. Yes, sir, we will do that.

[The following information was received for the record:]

FIREFIGHTING EQUIPMENT

In addition to Oshkosh, fire trucks were recently purchased from Pierce Manufacturing, Inc. of Appleton, Wisconsin, and Quality Manufacturing Company of Eastaboga, Alabama. The fiscal year 1982 P-4 crash fire truck is currently being negotiated as a competitive, two-step multi-year contract award. Although details are procurement sensitive at this time, we can say that several acceptable proposals have been reached. We believe this attests to the competitiveness of both the fire truck manufacturing industry and the specifications we use to buy fire trucks.

Mr. HILLIS. In purchasing these vehicles, how many administrative-type vehicles will you be buying that are foreign produced?

General BOWDEN. We have a modest amount of vehicles that we procure in a European buy program. The percentages are very small, sir.

Mr. HILLIS. I would like to know the number. Would you provide that for the record?

General BOWDEN. I will provide that for the record, sir.

[The following information was received for the record:]

ADMINISTRATIVE-TYPE VEHICLES THAT ARE FOREIGN PRODUCED

The fiscal year 1983 budget request contains 1,190 administrative use vehicles planned for procurement in Europe. However, if current legislative restrictions on foreign vehicle procurements remain, these vehicles are still required and will be procured stateside.

Mr. MCCURDY. You were indicating the firefighting equipment. You are saying that you are in charge of the logistics for all the firefighting equipment throughout the services?

General BOWDEN. That is right, sir.

Mr. MCCURDY. You mentioned Vance, which I have some familiarity with. I had always thought that was contracted out. Are any of the firefighting services provided by contracting out?

General BOWDEN. We only have one base, sir, that is contracted out in its entirety. That is Vance Air Force Base. All the other bases are operated by the Air Force. On Vance Air Force Base the equipment, itself, the firefighting equipment, I am uncertain whether we provide that or ask the contractor to provide that. I will have to clear up that point.

[The following information was received for the record:]

FIREFIGHTING SERVICES PROVIDED AT VANCE AFB

Vance Air Force Base is the only Active Air Force installation within the United States which has fire protection services furnished by contract. The firefighting equipment is provided by the Air Force.

Mr. MCCURDY. More than likely, we purchase it and then they operate it and maintain it. How have you found that type of operation at those bases? I mean at Vance, as far as the efficiency and reliability of the service?

For the chairman, this is Northrop that provides that, don't they, the basic contracting?

General BOWDEN. Yes; Vance Air Force Base is contracted out in its entirety except the pilot instructors; they are Air Force. It has been a very efficient operation; it has put out good pilot graduates.

Mr. MCCURDY. Have you considered expanding the use of such services to other small bases, or other particular functions such as firefighting, and has there been any study as to cost efficiency commensurate with that?

General BOWDEN. In the general arena of contracting out there have been a number of base services throughout the world that have been considered candidates for contracting out. We have a very detailed process that we go through to find out what is the most efficient type operation.

This year, in our program that we are considering there are a number of contracting out initiatives that we are undertaking. It is a big subject that we are studying right now.

I might express an opinion that the contracting out is a very complex issue and we have to make sure that we do not contract out some vital services that are required to do our mobility job and maintain our war-fighting capability.

Mr. MCCURDY. It is the belief of this member and other members that we have to be sure that we are not contracting out those readiness capabilities. It is hard to clearly define what that capability is. I would be interested to see in what areas you feel you can accomplish that, again because I am familiar with the Vance Air Force Base in Oklahoma. Thank you.

General BOWDEN. Yes, sir.

Mr. MCCURDY. I was not able to be here during the whole hearing, but what can you say you have actually done to improve the efficiency or saved money through some changes in this budget as opposed to the one you had last year? Can you show any area where instead of increases we have had some savings due to some management changes or some type of initiative or decisions made that quite frankly we don't need that thing anymore; we ought to work on something else?

General BOWDEN. I can give you one example of the kind of things we are doing to improve our efficiencies and economies. It deals with one of the strategic communications programs that I have in the handout data. That deals with the warning radar sites that we have in Alaska, we have in Canada, and in Greenland, where we have a line of radar sites to detect enemy bomber threats.

These radar sites go back to 1950-type technology; they are vacuum-tube-type equipments. It requires at each site 60 to 90 people to operate them. We are putting in a new set of radar sites going into Canada and into Greenland and into Alaska. These new radar sites will cut down the number of people required to operate each site from that 60 to 90 I told you, down to less than 10 people; plus the equipment will be more reliable. It will be self-checking, to reduce the maintenance costs.

These are the kinds of efficiencies and economics that we are trying to do. Throughout the Air Force we are looking at our maintenance programs for our aircraft and our engines. We are looking at what we call class IV modifications, which are maintainability, reliability, and logistics support modifications, and we are looking to see where we can add a new system that will be efficient.

The great problem that we have in the Air Force with a number of our old systems is that the vendors are going out of business and we have some radar equipment that goes on our bombing navigation equipment where we cannot get parts anymore. It is very costly to try to get someone to do reverse engineering, so it is more efficient to put in a new system that has a good 20-year life cycle.

General RANDOLPH. We have two programs that we are proposing for multiyear funding: For the Defense Meteorological Satellite program we propose a buy of four spacecraft on a multiyear basis. If that is approved, we will avoid a cost of approximately $49 million on that program by virtue of doing that.

We are also proposing to do a block buy of the Navstar Global Positioning Satellite, GPS. If that block buy is approved, that is a $276 million cost avoidance over the life of the program associated with that particular approach.

We are in the process right now of doing an EAP [expanded advance procurement] on the Defense Support program [DSP]. That particular buy will avoid a cost of about $65 million over the four spacecraft.

Mr. MCCURDY. In a recent committee meeting, one of the distinguished senior members of the Armed Services Committee expressed some real concern and doubt about the Navstar and whether or not we ought to be placing some money there. I have not formed an opinion on it yet, even though I have had a briefing.

I am going to ask you a tough question, and maybe you can give me a tough answer:

If you were required to save $10 billion out of this budget that you submitted, without directly affecting readiness, how would you make that change?

General RANDOLPH. I am afraid I can't answer that question. Let me specifically address the Navstar request. The Navstar request for fiscal year 1983 is $220 million, both procurement and R.D.T. & E. That particular program, in my view, is vital to the defense of this country; it provides a capability that does not now exist. The costs are under control. The technical capabilities of that program are quite good. I am not at all familiar with the $9 billion cost. The five year defense plan is $3.2 billion for full satellite capability and 3,500 user sets; however, the issue of how you could cut $10 billion, I am afraid, is a little bit above my pay grade.

Mr. MCCURDY. The decisions are sometimes made above your level and I am not sure they should be. I think we ought to go down a little farther. Maybe that is one of the questions we ought to ask NCO's, how we can best save money in these areas. I am one of your big supporters. I am saying there is a lot of pressure. We would like to find out the extent of priorities here. We can't have everything.

The question is, where do we do it? Maybe I ought to say which of these items here do you feel is the most important, the single-most advancement we have made in the budget?

General RANDOLPH. The single-most important program as far as procurement for this fiscal year is clearly the [deleted] depends on that program, and I would have to say that has to be the most important program that we have ongoing in the procurement area.

In the research and development area for the future, the most important program is Milstar. It is the first space communications system that is designed for total survivability both physically and electromagnetically; that is, the antijammer capability. It is a very important step forward as far as communications area.

I should quickly say that we are talking about space and C^3 programs.

Mr. McCURDY. I understand that. I don't expect you to talk about F-16's.

Have either of you gentlemen been advised of the so-called Carlucci management initiatives?

General BOWDEN. Yes, sir, I am familiar with the 32 initiatives and have specifically worked on three of them that deal with better ways to increase readiness and sustainability of our forces.

When we deliver weapon systems we make sure that they are supportable.

Mr. MCCURDY. Have you looked at the cost initiatives and some of the savings involved there?

General BOWDEN. The cost initiatives I am not familiar with; however, in working the three initiatives that I alluded to, we most certainly are looking at ways to deliver a weapon system that can be maintained in the right kind of way over the life cycle of it, and in the most cost effective way, and make sure that we put on contract the quantities of spares and put on contract, in a timely way, the modifications to keep our weapon systems modern.

We have looked at ways to coordinate our information between the program directors and the logistics managers, to make sure that we are not duplicating each other's work and that when we get ready to present a program to you we have our act together and we can come up with the best recommended cost programs.

Mr. McCURDY. Were you aware of these by your own initiative or was there a document that came down to you and said, "OK, generals, we have these initiatives; we want to see if you can help out"?

General BOWDEN. It is my opinion that a great number of these initiatives were being worked in the Air Force and the other services at the time these 32 initiatives came down. The 32 initiatives summarized a lot of very important management actions that needed to be accomplished in order to get on and improve our warfighting capabilities.

I know in the programs I worked with we had already started programs that would allow us to fit into the management principles that came about. I must say it was a wide-sweeping document that made us do some thinking and pull those programs together.

General RANDOLPH. To answer your question, yes, the initiatives were distributed to all of the services. We all had access. Certainly, the multiyear funding initiative is one of the things that we have been working with OSD on and are trying to promote, because clearly efficiencies will be gained by placing orders on multiyear contract.

Mr. McCURDY. We have passed multiyear and made it available. I am glad it has finally come about.

What I am getting at is, I want to see what management philosophy has been disseminated or is prevailing in the service itself and do you see a change in the management philosophy if the cost is now becoming a key factor, one that is of primary importance, as well as the other important issues? I think we have found in the past it has not always been that way. Maybe there is an increased awareness, but I want to get your views on how you view that issue.

General BOWDEN. There is an increasing emphasis on a change in the considerations in bringing weapon systems in, not only the

cost, the schedule and the performance, but also the supportability or war readiness leg of it is being put in there. No longer is it a three-legged stool but it is a four-legged table. Our top leadership has certainly been in tune with this new emphasis for making our systems ready to go to war and sustainable once we get there.

So, there most certainly has been a key management philosophy, along with these cost initiatives that you are talking about.

General RANDOLPH. I can assure you cost consciousness is a No. 1 priority.

Mr. MCCURDY. If I were to ask you the one project that had the most difficult R.D.T. & E. problems, the technological problems, in the past few years, the biggest hurdles to overcome that you feel you have finally gotten over, which system would that be?

General RANDOLPH. I would have to say one of the toughest problems that we have had in the R.D.T. & E. area is the antisatellite weapon. We have been very pleased with the progress that we have made. Our ground tests to date have been quite successful. We are feeling increasingly confident that when we do the actual space test [deleted].

It has been a fairly complex program from the area of both command and control and technology involved.

I would also have to quickly hasten to add that oftentimes our problems are not technological problems but our problems are maintaining control of the cost. That is an area that we need to work much harder on, and in this current administration we are doing precisely that.

Mr. MCCURDY. Thank you.

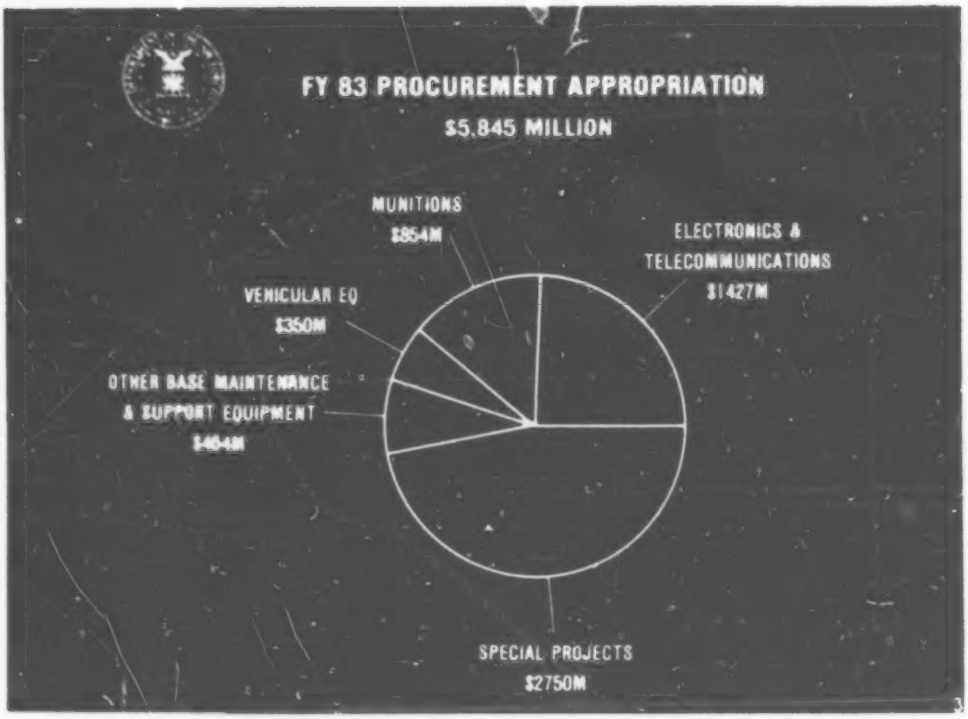
Mr. STRATTON. Thank you, Mr. McCurdy.

Mr. Klein, do you have any questions?

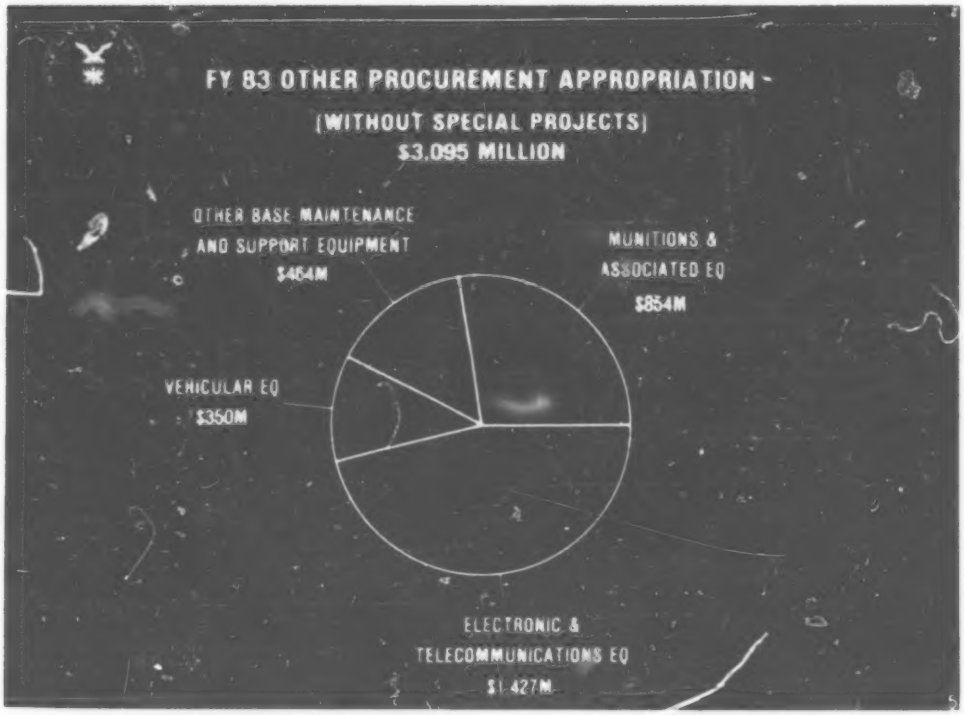
Mr. KLEIN. I have no further questions.

General BOWDEN. I have some graphs and pictures of some of the equipment that I would be pleased to run through very quickly for you, time permitting.

Mr. STRATTON. Why don't you do that.



General BOWDEN. Just to highlight the other procurement programs for the Air Force, which I mentioned earlier, this is the arena that we are discussing with you today; included in this, along with strategic communications, are the tactical communications equipment, in the munitions area where we are working hard over the next 5 years to fill up our storage bins to meet our requirements to fight a war over the period of time required.



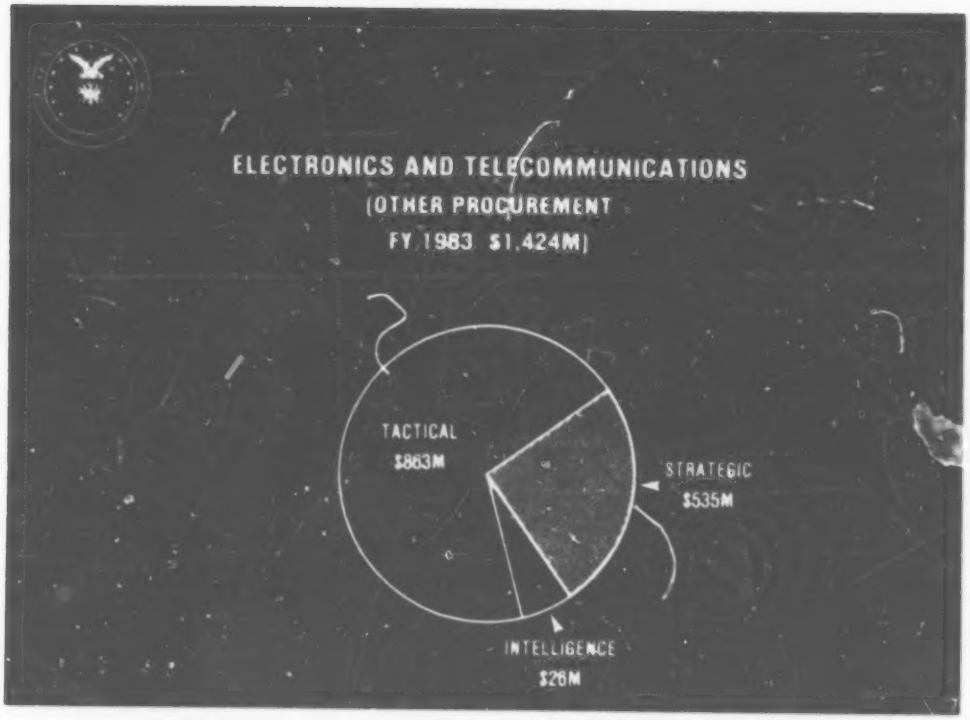
In the vehicle equipment area we have a problem with aging vehicles, not only the sedans and the pickup trucks but also a great number of the other support equipment items that we have briefly talked about.

We have a very aggressive program over the next 5 years to modernize our vehicle fleet.

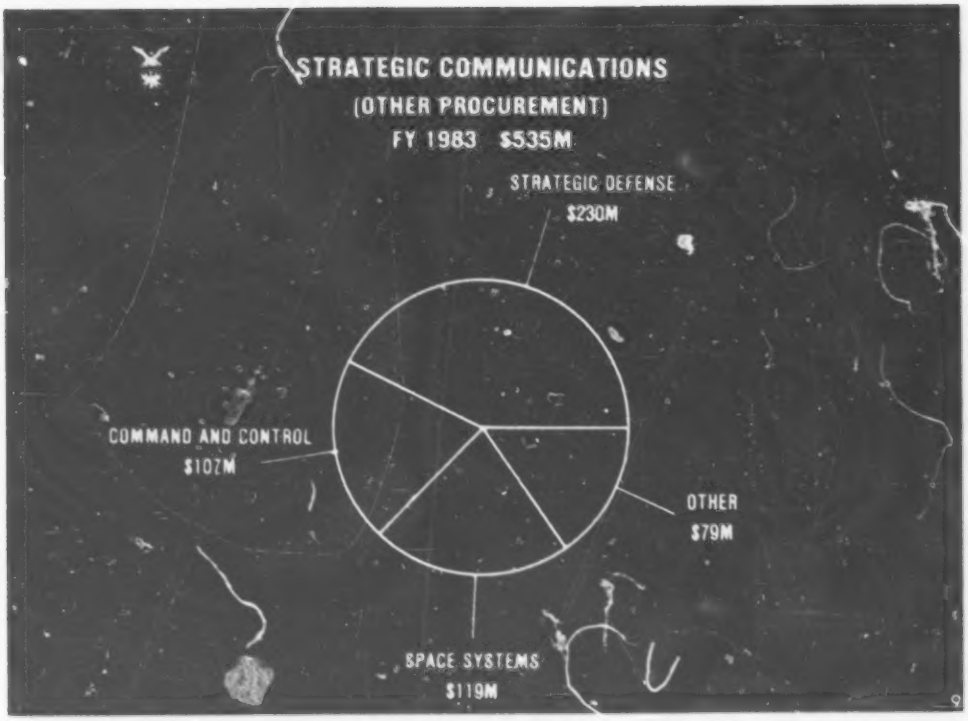
The other base maintenance and support equipment contains a great number of items that apply throughout the Air Force, Air Logistics center type equipment, and most recently the emphasis on the bare-base and mobility equipment that supports the Rapid Deployment Forces.

The special programs that were down on the bottom of that first slide include the classified or special activities programs. I will not be discussing those today. You take those classified programs away and the Air Force Other Procurement account goes from [deleted] billion to [deleted] billion. This is the area that we are talking about.

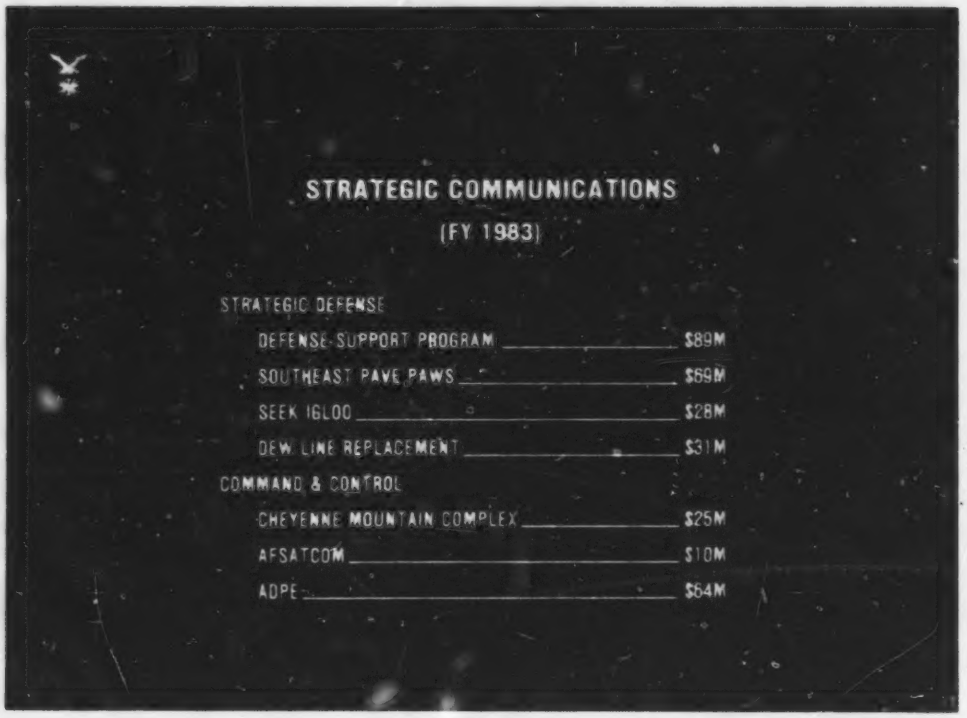
Now, we get into the electronics and telecommunications aspects of the program that we want to talk to you about today.



The pie is distributed like this: $535 million for strategic communications; $850 million for the tactical, and intelligence equipment is $26 million. I need to emphasize the program I am discussing today is the ground equipment that is compatible with the airborne-type capabilities and space capabilities that have been discussed earlier.



There are the kind of programs that we have within the strategic communications, strategic defense, command and control, space systems and our other logistics and training, and I have a couple of graphs that break those out and give you examples:



First, in the strategic defense, these are the kinds of dollars in our 1983 program that we are requesting. The first one is Defense Support program. I am discussing the modernization we are making on our ground stations to accept the information coming from the defense satellites and what we are really doing is buying a series of mobile stations that will be able to improve our survivability. Pave Paws is our system to detect submarine ballistic missile launches. Our request in 1983 is to add a site in the Southeastern United States that will fill a void in that part of the world in detecting submarine launches.

Right now we have two sites—one up in the Northeast and the other in the Northwest part of the United States. We have a program that will eventually over the next few years put a site in the Southwestern quadrant so that we will have all the gaps on our submarine ballistic missile warning net covered.

Mr. McCURDY. Is that land based?

General BOWDEN. This is a land-based ground station I am talking about, and I will show you a picture of this radar site in a few moments.

The Seek Igloo and DEW Line replacement are code names for radar sites that are in Alaska, Canada, and Greenland that detect the incoming bomber fleet. Those are the radar sites I discussed where we are modernizing and we are putting in a system that less than 10 people can operate.

Mr. STRATTON. On that, General, you indicate here that the DEW Line will be replaced with minimally attended and gap-filler radars. The Air National Guard in Schenectady, in my district, has been flying up there regularly with the assignment to supply what-

ever they need on the Greenland icecap. Does this mean that flights will be terminated or will they continue?

General BOWDEN. There will still be a requirement to provide logistics support, parts, rotation of people, as long as we have those kinds of sites up there, sir. Our goal is to reduce the number.

I must say that the overall goal is putting in these modern radar sites.

Mr. STRATTON. It gets down so that 10 people can operate it?

General BOWDEN. Yes, less than 10 people can operate the sites.

Mr. STRATTON. How many do they have now?

General BOWDEN. Sixty to Ninety people.

Mr. MCCURDY. How many sites?

General BOWDEN. Eventually we will be putting in a string of one or more sites in Alaska, Canada, and Greenland.

Mr. STRATTON. Do you think there might be a minimum figure below which you could not go? You have to have a few people around to talk to.

General BOWDEN. You have to have people to work the shifts. It is a 24-hour-day operation. We are making a significant reduction in the number of people required to go to those sites.

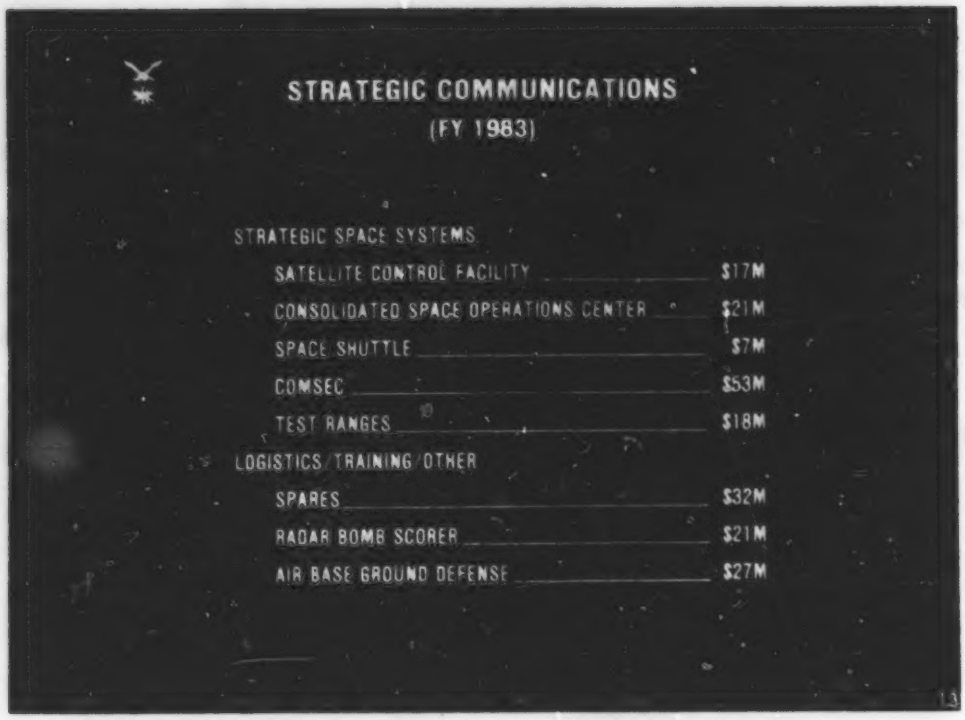
Mr. STRATTON. Thank you.

General BOWDEN. In the command and control area, we have a $25 million request to update some of the capability in the Cheyenne Mountain complex. It is primarily computer updates in trying to get in tune with the capabilities that are going on in space, to be able to compartmentalize the sensitive-type information that they are handling out there.

Mr. MCCURDY. Is that something that can be done next year?

General BOWDEN. Sir, the programs that we have listed for that area in stragtegic defense really need to be modernized. We are bothered by not only the age of the equipment but also we are bothered by not having the capability to receive some of the mission data that is coming down. Every year we put off, we are going to be paying for it later. We have so many of our programs that have gaps in the kinds of capability that we cannot cover, and it would be a serious mistake not to consider these programs for funding this year in our space defense.

We are making improvements in our Air Force satellite communications equipment so that we will be able to pass word from the National Command Authorities to the bomber force and this appears in our SIOP plan. The automated data processing equipment contains a number of programs that all the major air commands have. We are making some computer updates to be able to handle engine management data better, handle personnel data from the personnel center to all the bases, finance data from the finance center to all the bases.



The last two categories within the strategic communications deal with space and logistics and training. I will simply cover a few of them and say some words that General Randolph did not say.

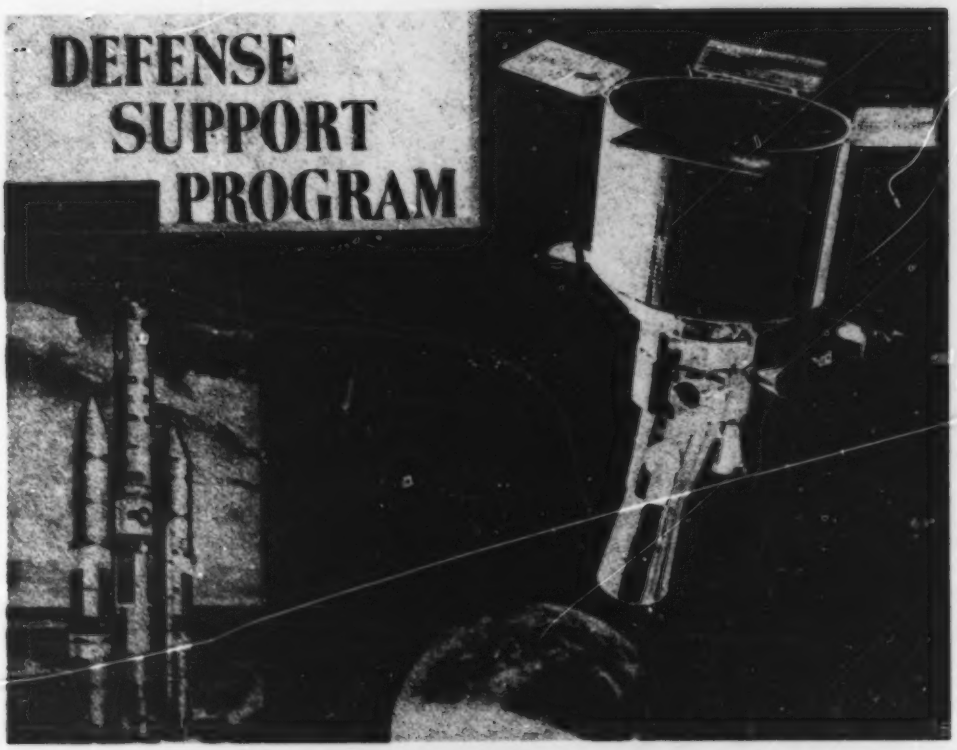
In Space Shuttle, that request is to put in some navigational aids at Vandenberg and communications equipment at Vandenberg to be able to handle the Shuttle program.

Test Ranges—we are talking about the eastern test range at Cape Kennedy and the western test range at Vandenberg. We are modernizing some of the radar and telemetry equipment at those ranges.

In the logistics and training arenas, the spares program is part of the overall problem in the Air Force. We need to buy more spares not only for aircraft and engines but also the spares that go with this communications equipment that we are discussing.

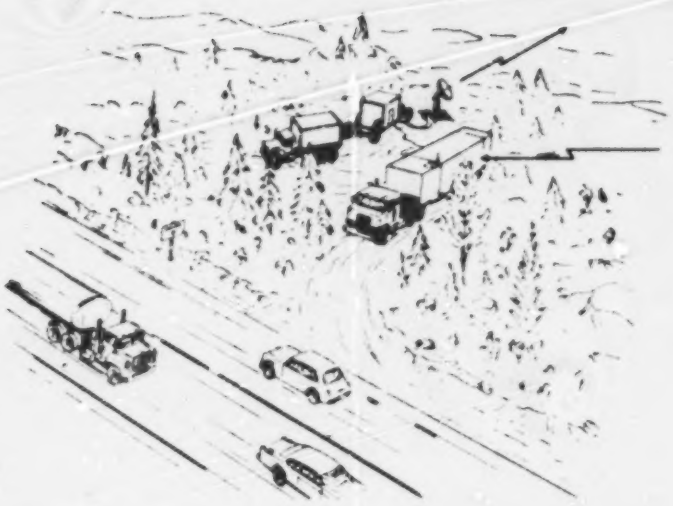
Radar Bomb-Scorer—this is a new radar site to be able to electronically track bomb release from a SAC aircraft. We have a lot of young crews and they need to make bomb runs and know how well their accuracy is coming along. We are putting in a request to start a modernization of our radar bomb-scoring program. It has been going on for 25 or 30 years.

Mr. McCURDY. How had they been grading before?



General BOWDEN. We have several radar bomb-scoring sites. These sites go back to the fifties. There are several vans. We have been operating them day in and day out. When one goes down we have to schedule crews on an alternate site. We have them placed around the United States. All the SAC bomber crews have access to them. They can go out and make their bomb runs and be electronically scored.

I will just show you some of the kinds that we have now in these four categories of our strategic communications.

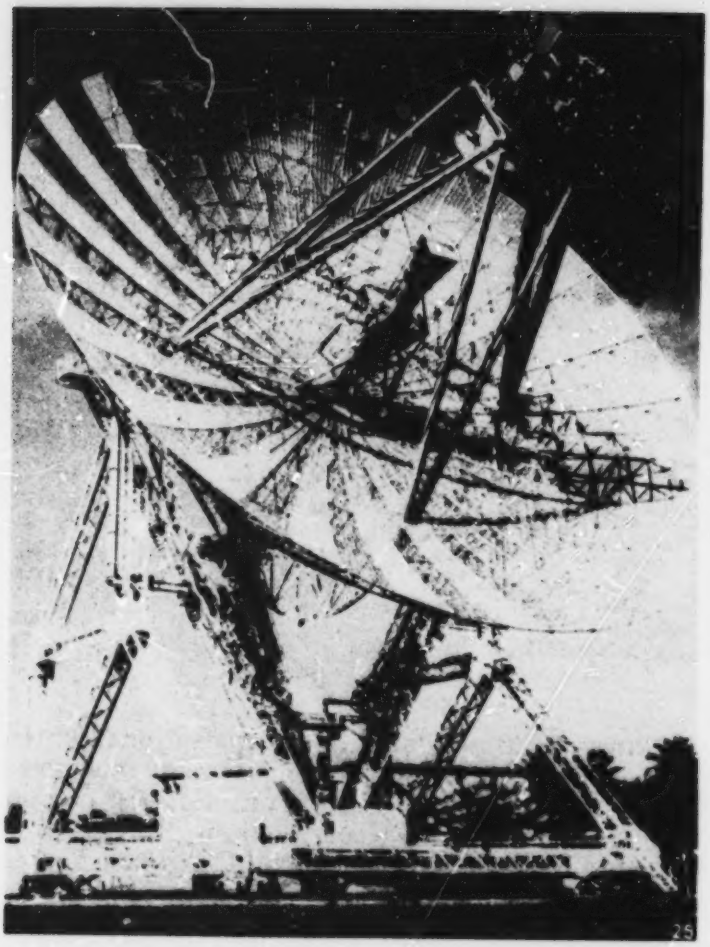


These are the mobile-type sites that we are requesting for our defense satelite program. We are talking about the equipment that goes in there. We are also putting in some jam-resistant type capability so that we will have a better operational capability. We are asking for six of these mobile sites, so that we will be able to scatter them out and survive.

PAVE PAWS

This is the submarine ballistic missile warning site that we are talking about, nicknamed Pave Paws. To give you some idea of the size of this radar with the utility poles, this is 110 feet. This is the radar network that I discussed, the DEW Line and Seek Igloos, these minimally-attended radars you discussed, sir.

There are 13 of those in Alaska, a total of about 50 as we complete the ring across that part of the world. This is the kind of equipment that we are updating in the Cheyenne Mountain complex as the response to the National Command Authorities.



Space tracking equipment—our job in the other procurement account is to buy these kinds of radar antennas, to modify them and to buy spare parts. Our overall facilities around the world, sites in England, Hawaii, Thule, Sunnyvale, Calif., sites in New England, a wide network of facilities that we support around the world.

Mr. KLEIN. Are you going to address the site at Colorado Springs?

General BOWDEN. Consolidated Space Operations Center, yes, sir. It is our responsibility to procure the equipment that goes into that new site. We, in fact, have a goal of consolidating our space operations at Colorado Springs in close proximity to the other mission control and warning-type systems in the Cheyenne Mountain complex.

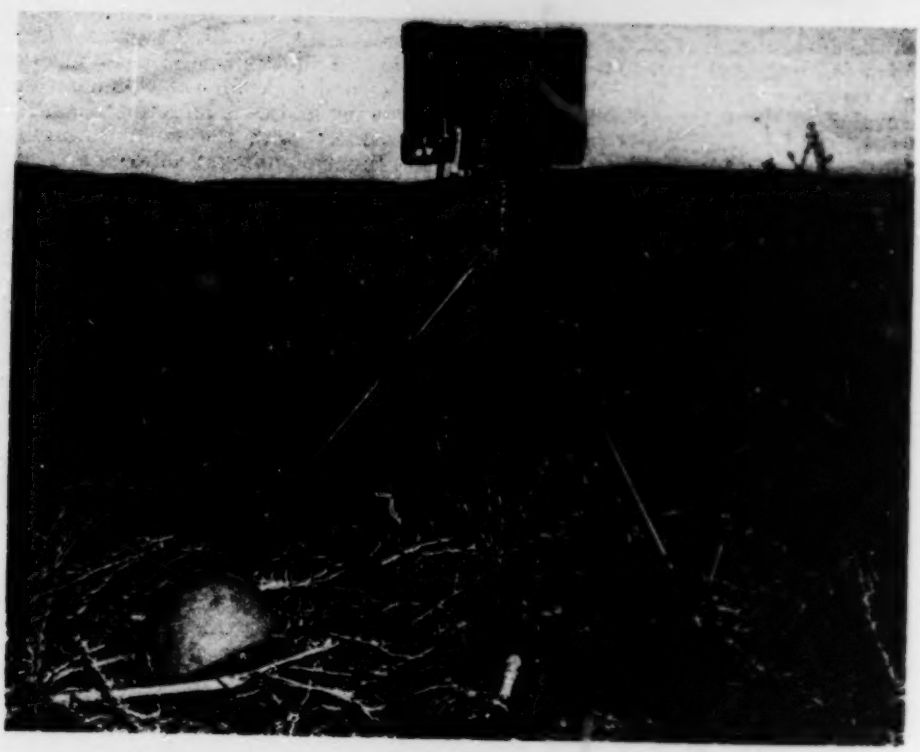
Mr. KLEIN. What will you be able to eliminate in those operations?

General BOWDEN. I honestly don't know our position on that. Can you help me, General Randolph?

General RANDOLPH. The purpose of the Consolidated Space Operations Center is twofold. First of all, it is to procure additional capability to control our on-orbit spacecraft over and above what is available at the Satellite Test Center in Sunnyvale. As you saw on the chart, we will be getting more equipment and we have two choices: We can add to the capability we have in Sunnyvale, or we build another site. It turns out for survivability it is more prudent to build another site, so that the Sunnyvale facility, which is located on an earthquake fault, could be not only backed up but also added to. That is one purpose.

The second purpose is to provide a Shuttle operations planning facility, so that we in DOD can control our Shuttle on-orbit activities when we launch DOD payloads with the Space Shuttle. The Johnson Space Center will have a limited secure capability center at Houston; however, that will be quickly saturated by 1987. It is imperative that we get on with developing the DOD capability as we had previously agreed to with NASA.

General BOWDEN. Some of the radar tracking equipment at the western test range at Vandenberg—this is the radar bomb-scoring site, modernizing our old equipment, putting the new tracking and scoring systems in.



Another program that we have—antiintrusion devices for security, adding sensor cabling around sensitive areas as an alert pad to see who might be trying to penetrate, who have no business coming in. We have a very extensive program for these kinds of sensors that we put around the perimeters.

That concludes the set of photos and slides that I wanted to show you.

[The following questions were submitted to the witness to be answered for the record:]

NASA SPACE BUDGET

Question. General Randolph, the NASA space budget seems to be going down while the Defense budget is going up. Is it true that the Department of Defense is having to back up more of the overhead of the space shuttle because of underfunding in the NASA budget?

Answer. No. The allocation of funding responsibilities is the subject of a 1977 Memorandum of Understanding between NASA and DOD which was reaffirmed in 1980. We (NASA and DOD) are continuing to fund in accordance with that agreement.

FACILITIES FITTING INTO C^3 PICTURE

Question. General Bowden, will you explain two things in a little more detail. One of these is the consolidated satellite control facility in Colorado Springs, and the other item is the Cheyenne Mountain Complex in Colorado. How do these facilities fit into the entire C^3 picture?

Answer. The Consolidated Space Operations Center (CSOC) in Colorado Springs has the dual mission of performing satellite control in the Satellite Operations Complex (SOC) and DoD Shuttle control operations in the Shuttle Operations and Planning Complex (SOPC). The SOC will provide a second node for the command and control of satellites by performing telemetry, tracking and command functions. The SOC will share the normal satellite support workload with the existing Satellite Test Center. The SOPC will perform all Shuttle flight planning, readiness and control operations in support of DoD flights. The SOPC will provide the requisite security and survivability while providing the DoD direct mission authority over DoD Shuttle operations. These two missions have been collocated in the CSOC to increase the overall effectiveness of satellite and Shuttle operations while accruing efficiencies in the life cycle cost.

The NORAD Cheyenne Mountain Complex (NCMC) provides CINCNORAD with the facilities essential for the command and execution of his mission—ballistic missile warning, space defense, and atmospheric defense. To successfully accomplish these diverse objectives, the NCMC utilizes a broad complement of automated data processing systems to assimilate, assess, display, and disseminate timely, unambiguous, warning information to the National Command Authorities, CINCSAC, and other force commanders.

One significant and evolving role of the NCMC is that of space defense—to include the detection and assessment of any hostile threat to vital U.S. space assets, protection of those space systems, and the possible negation of the threat itself. Although there is a similarity of some computational tasks between the NCMC Space Defense Operations Center (SPADOC) functions and the CSOC satellite control functions, there is a significant distinction. The NCMC performs a military command and control function, while the CSOC performs technical control functions. For example, the SPADOC does not perform mission planning or command generation for spacecraft; the CSOC does not maintain data on foreign space objects or correlate indications and warning data. The NCMC exchanges real-time data with other command centers such as the SAC Command Post and the National Military Command Center in addition to interfacing with space control elements. We do believe, however, that increased close interaction between SPADOC and CSOC will result from the SPADOC/CSOC proximate location, enhancing mission effectiveness of both of these capabilities.

Mr. STRATTON. Fine. Thank you very much, General.

I think that pretty well winds up our session for today. We appreciate the information you have given us, General Randolph and General Bowden.

We will stand adjourned until 10 o'clock tomorrow. Thank you very much.

[Whereupon, at 4:50 p.m., the subcommittee was adjourned, to recovene at 10 a.m. on Thursday, March 4, 1982.]

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DEPARTMENT OF DEFENSE AUTHORIZATION FOR FISCAL YEAR 1983—DEPARTMENT OF THE AIR FORCE

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D. C., Thursday, March 4, 1982.

The hearing was held, pursuant to recess, at 10 a.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton, (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

This morning we will conduct oversight hearings on defense programs relating to airlift. It is well known that the United States has a very serious shortfall in timely strategic airlift. This problem was recognized by the Congress and the 1981 Authorization Act required the Department of Defense to review the total airlift requirement.

In May 1981 the report was completed and presented to the Congress. It documented significant airlift shortfall based upon any scenario considered.

The Department of Defense has devised a program that partially addresses the problem. The route toward this solution is not without controversy. The Air Force, after conducting a competition among Boeing, Lockheed, and McDonnell Douglas, selected the latter to develop the C-17, an aircraft designed to enhance both strategic and intratheater airlift.

Subsequent to the selection, the Air Force determined that given additional front-end funding, additional procurement of C-5's would produce a sufficient strategic airlift capability 2 years earlier than the C-17. The C-5 option, however, does little to correct intratheater airlift deficiencies. As a result the 1983 budget contains $860 million to begin procurement of 50 C-5B's.

Additionally, the budget contains $829 million to continue procurement of eight KC-10 aircraft to provide additional cargo and air refueling capability for our deploying forces. Those will be procured from McDonnell-Douglas so they will not be left destitute.

This program is particularly attractive to the Congress because it makes use of an existing airframe with the necessary modifications for an air refueling capability. The Congress recognized the cost effectiveness of the KC-10 when last year it elected to fund four aircraft in the face of a DOD attempt to kill the program.

We realize that the Air Force was very successful in obtaining attractive option prices for these aircraft in the past, and we want to take advantage of those options in the future if possible. It is,

thus, a matter of concern to the subcommittee that the procurement cost of the KC–10 is projected to go from $55 million last year to $66 million in fiscal year 1983 and $80 million per aircraft in fiscal year 1984—a 45-percent increase in 2 years.

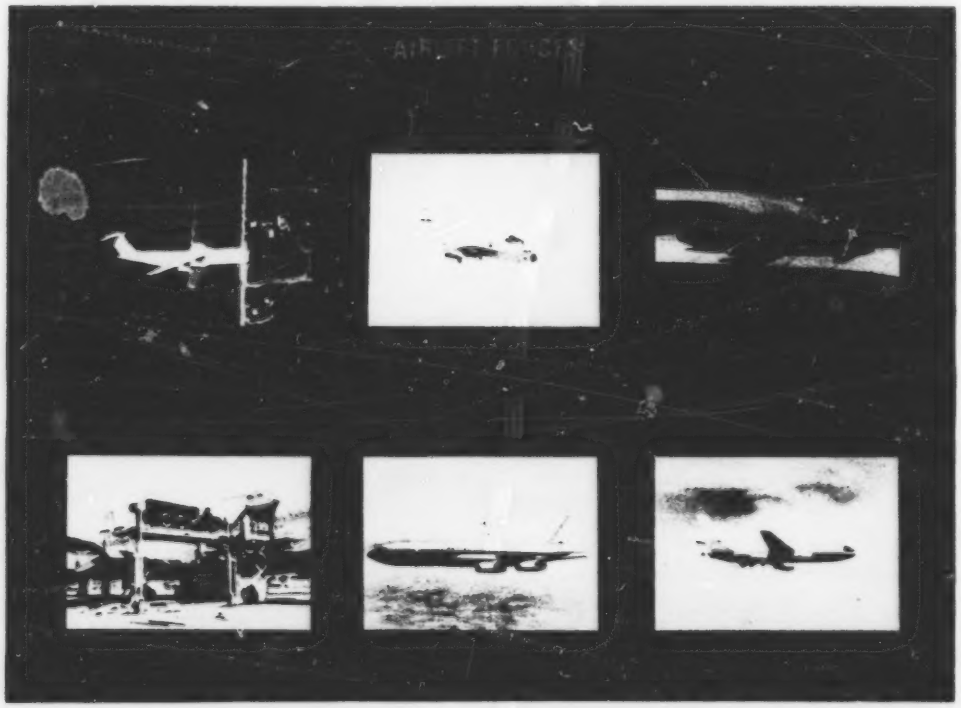
The final element of the Department's plan to address the airlift shortfall centers around the capability existing in the air carrier industry. This committee was instrumental in pursuing new legislation to facilitate the airlines' participation in the Civil Reserve Air Fleet [CRAF]. We are concerned that no real progress has been made in this area. In fact the Air Force has generally dragged its feet with respect to the whole program and this is something that we want to discuss today.

Our first witness will once again be Lt. Gen. Kelly Burke, Air Force Deputy Chief of Staff for Research, Development, and Acquisition.

General, you can start the ball rolling.

STATEMENT OF LT. GEN. KELLY H. BURKE, USAF, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT, AND ACQUISITION

General BURKE. Thank you very much, Mr. Chairman. I appreciate those comments. The Air Force owes a great deal to this committee for its recognition and support of airlift over the years. I think of all the congressional committees it is this committee and subcommittee that has done most for the country in this important regard.

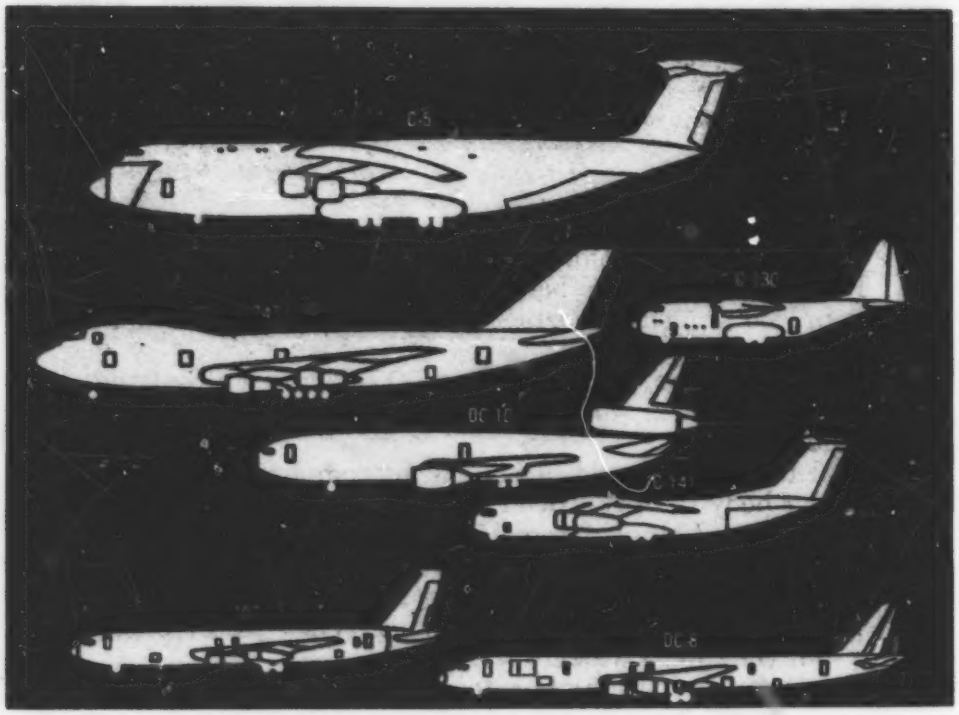


If I can build on your remarks, I would like to remind you of

what is in the airlift forces today and then talk about what we plan to do for the future.

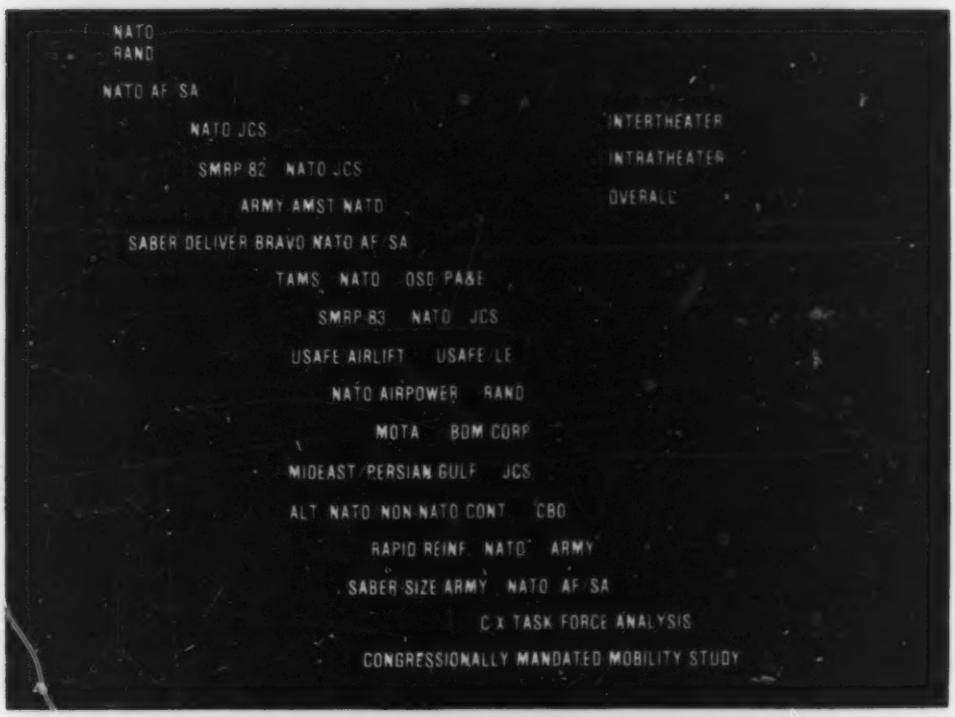
We have 77 of the very valuable C–5 aircraft. We have 276 of the C–141's which provide the bulk of our strategic airlift capability. For intratheater, short haul, we have 563 of the C–130's in airlift. We have some others in nonairlift roles. We have all of the available freighter aircraft in the American airline industry in our CRAF program. We express that in terms of 747 equivalents. It is about 73 of those although it is actually made up of 707's, DC–8's and whatnot. We have a CRAF passenger program, and we have no problem there. We have ample passenger CRAF available from the airlines to move people.

We also of course have the KC–10 which is a different sort of airplane in that it is both a tanker and a cargo airplane and can do both those roles.



That is what we have today. The airplanes do different jobs. We talk of cargo in three categories. Bulk cargo is things that are small enough to go on a standard airlift pallet. Any of these airplanes can carry bulk cargo.

The next size is what is called oversize cargo. That is by arbitrary definition the biggest thing you put on the C–141, and that perhaps would be a jet engine. These airplanes here can carry the oversize as well as the bulk cargo. It is only the C–5 that can carry outsize cargo, the big things, such as Infantry Fighting Vehicles, helicopter artillery and tanks, the muscle and fire power of the Army and Marine Corps.



We have had more studies of this subject than is really necessary. This shows what has been done since 1974. All of them show there is indeed an acute shortage of airlift and most particularly of outsize airlift.

Mr. STRATTON. You mentioned the C–17. If you will put the other slide back there, what would be the size of the C–17 compared with those other aircraft?

General BURKE. It would be somewhat comparable to the DC–10. It is a wider body than the DC–10.

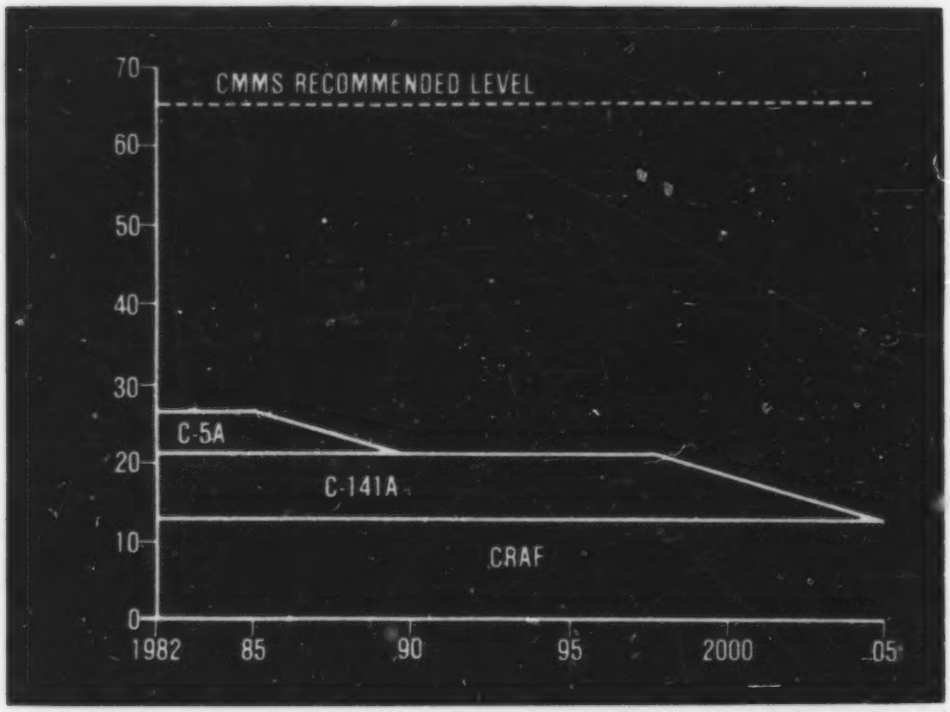
Mr. STRATTON. I think I remember seeing at the air show something like that.

General BURKE. The AMST you saw at the air show. We had two built, by Boeing and McDonnell Douglas. They were considerably shorter, but they were wider.

Mr. STRATTON. A little higher, too.

General BURKE. That is right. I will show you a picture of the C–17 later.

I won't go through these, just to say it is a well-studied subject, the most recent being the one you referred to which was delivered last May. Every study shows we need more airlift and more outsize capability. Here is what the CMMS, congressionally mandated mobility study, showed we really needed—about 65 million ton-miles of airlift per day including a large portion of outsize capability.



This is what we actually have today, about 26 million ton-miles capability. If we did nothing, our position would deteriorate. The C–5 wing would cause those to go into early retirement. We would drop down to a little over 20. In time, our C–141's also retire and we assume the CRAF would stay the same. It is a bad situation and would deteriorate if we did nothing. Obviously we don't intend to do nothing.

Mr. BADHAM. Would you go back to that slide, please? The C–141 is an older airplane than the C–5?

General BURKE. Yes, sir.

Mr. BADHAM. The C–5 is such that if you don't do anything to them they will wear out before 1990?

General BURKE. That is correct. The C–141 out of which we expect to get 45,000-hour life.

Mr. BADHAM. You have to put a new wing on the C–5 to get it up to 30,000?

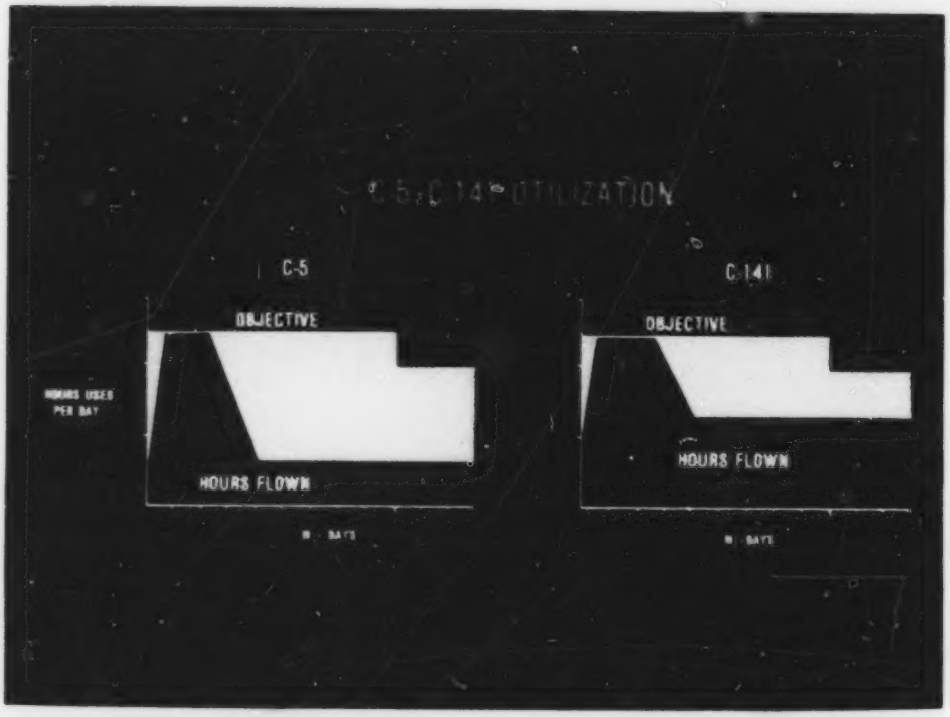
General BURKE. To get 30,000 additional hours over the approximately 8,000 that we otherwise will get. We will get a total of 38,000. The C–5 procurement is a very unhappy story. A lot of serious mistakes were made on the part of the Government and the contractor. I think we have no choice but to address that, and this is one of the things we will be doing.

AIRLIFT FORCES OBJECTIVES

There are several approaches to this and I will talk a little about each of them. I think before we start talking about new airplanes, the airlift, tactical fighter or anything else, we should be in a position to show that we are doing all we can to get every bit of mile-

age we can out of what we already have in terms of sustainability, and we are doing that. We do need to complete the modifications, both to the C-5 and C-141. There will still be a major deficiency in airlift. I will talk about ways we propose to reduce that.

While we are doing that we do need to keep in the back of our minds that in time we will have to think about replacing the C-130 and C-141.



This shows the inherent capability of both the C-5 and C-141 is to fly a [deleted] utilization rate per day for the first [deleted] of the war and then maintain [deleted] a day.

In black is shown what we are capable today of doing. The white, if you will, is the deficiency or shortfall. That is a consequence of not having the necessary spare parts and not having hired and trained the necessary crews to fly those hours.

Mr. STRATTON. You have lost me there. It is very pretty, but I am not sure what it means.

General BURKE. If we went to war today we could fly our C-5's for nearly [deleted] a day for just these few days. We would have to quickly decline to about a [deleted] a day rate because we would be running out of spare parts and we would not have the crews either. If you buy the spare parts and have the crew you could fill this in and fly [deleted] a day for [deleted] and then [deleted] a day from then on.

The picture for the 141 is not quite as bad. The first thing that ought to be done is to fill that in. Indeed we have done that. In the 1981 and 1982 budgets you can see we made a very substantial increase in our spare parts investment for both of those airplanes,

and that will, if those are delivered, fill up the bins to let us do that.

SPARES FUNDING

[In millions of dollars]

	Fiscal year—				
	1980	1981	1982	1983	1984
C–5	147	334	322	125	135
C–141	18	65	138	37	47

Concurrently we will add the crews and train them. They will be able to fly them by 1984 at their full capability.

A couple of things we are doing to the C–141. First we are adding these plugs you see here to stretch the airplane, giving it 30 percent more volume. It can carry 10 of the standard airlift pallets; after the lengthening it can carry 13. It can't carry more weight, but it originally had a fairly small amount of volume and, as we observed over the years, more often it was filled up before it reached its maximum weight.

It is important that we add aerial refueling to it. That program will be essentially completed in June. It is ahead of schedule and below cost and has been a very successful program.

The C–5 wing modification that we spoke of is a consequence of inept performance by both the Government and the contractor back in the sixties when we built this airplane to begin with.

We found to our grief that the wing, rather than being 30,000 hours, was going to last a little less than eight. We have completed there design and have built the prototype, flown it successfully for a sustained period of time and are now moving into the production modification of these wings and that will be complete by 1987. It gives us 30,000 hours over the approximately eight that we had, also lets us carry a somewhat larger payload.

Mr. STRATTON. The part that you are replacing is the basic wing, leaving out the flaps in the back and engine in the front?

General BURKE. Yes, sir; the yellow, the center wing, inner wing, outer wing. That is the load-bearing part. That is the part that counts.

Mr. STRATTON. What was the trouble with the wing?

General BURKE. It was milled too thin. The contract had great penalties on the builder for meeting its performance in terms of its payload and range and none on its life. They took a calculated risk and milled that out and actually gave it the proof test. We were rudely shocked when it didn't work.

Mr. STRATTON. We never lost one as a result of that?

General BURKE. We did not.

Mr. STRATTON. You saw them deteriorate?

General BURKE. You could see the cracks getting bigger and bigger. You could calculate it would be just a matter of time.

Mr. HILLIS. Didn't that involve about 7,000 pounds in weight, something like that?

General BURKE. We have flown them at reduced weight.

Mr. HILLIS. I am talking about the material that was milled out of the wings. Theoretically, it put 7,000 pounds of aluminum back. Will that degrade the performance?

General BURKE. It will not. It will be somewhat heavier, but it will still carry larger payloads even above that. The gross weight will be able to go higher than it is now.

Mr. HILLIS. You are not going to do anything to the engine, though? The power will still be the same?

General BURKE. It will be the same engine as currently on the C-5A with the latest upgrades. That is the plan at the moment.

Mr. HILLIS. You lost something in performance, of course. That is why the problem arose in the first place?

General BURKE. You would give up performance carrying extra weight. It means you will need slightly more runway and you will be able to fly slightly less far.

Mr. HILLIS. That is the compromise?

General BURKE. Yes, sir.

Mr. HILLIS. Thank you.

Mr. STRATTON. Mr. Badham.

Mr. BADHAM. R. & D. has already been done on the engine to get that up to date for the ones being used now, is that right?

General BURKE. Yes, sir. The engine we have on here is very similar to the commercial General Electric CF6 engine. It is in wide use in the airline industry.

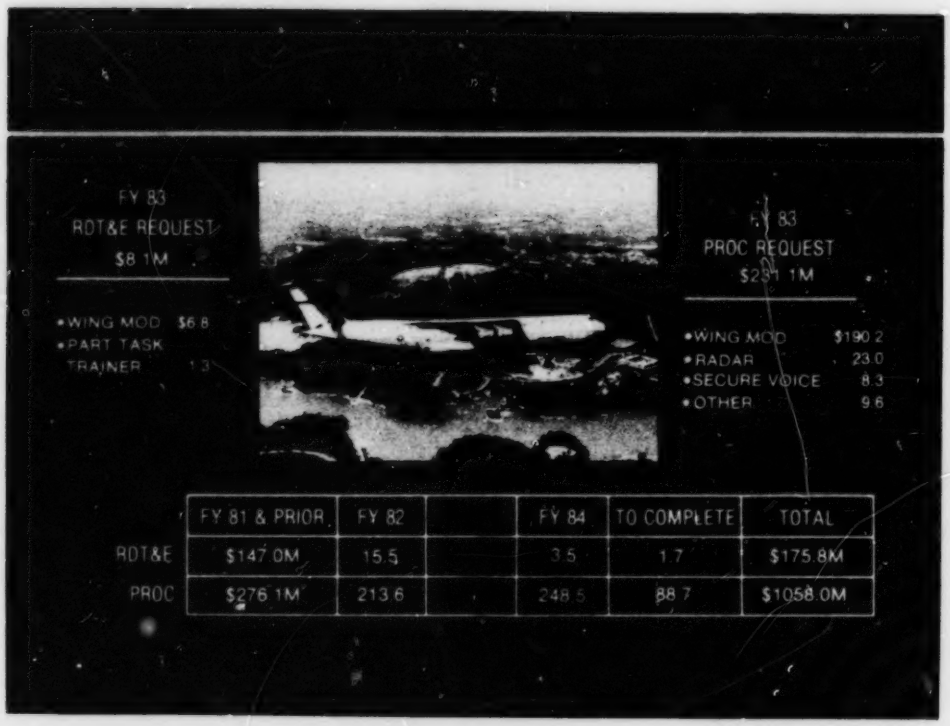
Mr. BADHAM. What was the original thrust of the engine in the C-5?

Colonel HAMBY. Sir, the original engine was a 41,000-pound thrust engine. The current engine is a little bit better than that. We have done a lot of upgrades for mostly maintainability and reliability on that engine. So, the engine is as expected originally, 41,000 pounds of thrust.

Mr. BADHAM. Is it not true that you are increasing the thrust on the C-5 A or B?

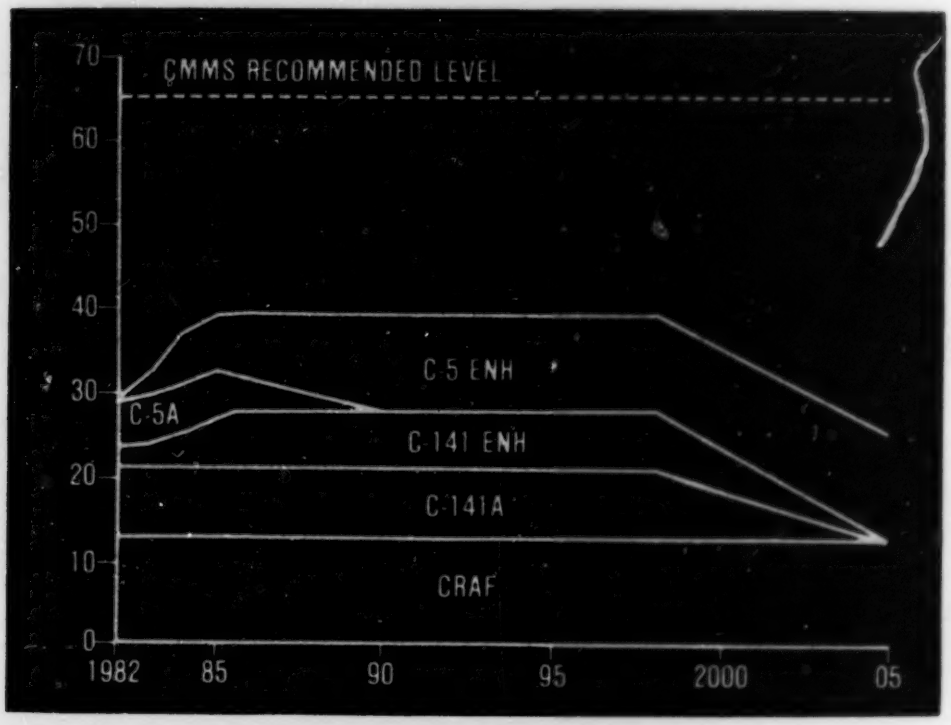
Colonel HAMBY. No, sir, we are not. The engine is the same engine that is being put on the C-5A's. As those engines are time-changed we put the upgrades in those engines and stick them back on the A.

There is available a commercial practice called bump rating that has been talked about that would allow you for short periods of time to go at a higher thrust level for very hot days or something like that. That is under consideration, but it is not an engine change, sir.



	FY 81 & PRIOR	FY 82		FY 84	TO COMPLETE	TOTAL
RDT&E	$147.0M	15.5		3.5	1.7	$175.8M
PROC	$276.1M	213.6		248.5	88.7	$1058.0M

General BURKE. Turning to the specifics of the 1983 budget, there is $231 million requested for modification to the C–5, and the bulk of that, nearly $200 million, is associated with that wing modification we have been talking about.



To return to my slide, sir, on the CMMS recommended level and what we have obtained by doing the things I have talked about, buying the spare parts, training the crews, modifying both the C-141 and the C–5, we get a substantial increase in capability, up to about 40 million ton-miles a day, but still well short of our goal. It is to this remaining gap that I will address my next comments.

Alternatives for Reducing Airlift Shortfall

In looking at ways to at least partially redress that, we thought in terms of things we could do in the near term and things that would take a bit longer.

In the near term our first thinking a year ago was to proceed with the CRAF program. There are different types of CRAF. We have the available cargo airplanes in the CRAF. We have an ample number of passenger airplanes in the CRAF. Having done that, and looking at our airlift shortfall, we aspired to put more cargo-capable CRAF airplanes in there because that is the cheapest airlift the country can buy, and we like it for that reason.

Working with this committee and the Congress we were able to get moneys appropriated for the plan of modifying passenger airliners, wide-body, as they came down the production line, putting in wider doors, heavier floors. So, while the airline would use them day to day in a passenger role, we could also use them for cargo in an emergency.

By the time we received the authorization and appropriation it turned out there was essentially no production coming down the line. We were able to obtain one airplane only, on that basis.

We then came back and asked Congress to change the law to let us also look at passenger aircraft already in service, provided they had a sufficient number of years remaining. We were optimistic that that would be approved. When we actually went to the airlines and asked for bids on that, we were quite disappointed. Not only was there a substantial charge for the modification and for carrying that extra weight, there was a very heavy charge for the time it would take those aircraft out of profitable service to do that work. We got bids back up to $25 million a copy.

We concluded that was too expensive and should not be done. However, we don't wish to abandon the CRAF program. We would like to come back to it when new production aircraft are once again available or if more attractive offers materialize to retrofit existing aircraft.

Mr. STRATTON. Let me interrupt you there for a second. You keep talking about your tons, the size of your airlift that is measured in tons of cargo. Part of the job is also personnel?

General BURKE. Yes, sir.

Mr. STRATTON. That is not quite as much a tonnage factor.

The proposal has been made by the head of the New York National Guard that Pan Am has a number of 707's that are CRAF configured and that they want to get rid of because they are in financial straits, as you are aware.

Would it not be effective if we could buy them at a relatively bargain rate for transporting the troops to Europe or to the Persian Gulf when the time arises as well as the cargo? Obviously those aren't too good for cargo, but don't we have to carry some bodies over too?

General BURKE. Airplanes are a little like yachts. It is not buying them; it is operating them that gets you. While they certainly would be cheap to acquire they would be expensive to operate.

Mr. STRATTON. These are the gas guzzlers we were talking about yesterday?

General BURKE. Yes, sir. The cheapest way by far to take care of passenger needs is to rely on the American airline industry and we have ample resources in the airline industry.

Mr. STRATTON. You are talking about an emergency takeover. I am talking about sort of a basic airlift that we would have short of an emergency.

General BURKE. Again, in the previous emergency situation including many years of Vietnam we never actually found it necessary to invoke that emergency clause. The airlines were happy to provide the airlift we needed and take care of our business on a more or less commercial basis. I think it would be a pretty expensive solution compared to what we have now.

Mr. STRATTON. Mr. Hillis.

Mr. HILLIS. The chairman hit on exactly the same point I was going to ask about. Apparently throughout the airline industry there is a surplus of wide-bodied planes, particularly 747's, not only Pan American, but Braniff and going down the list.

Has any study or thought been given to perhaps taking some of these or purchasing some and refurbishing them for outsize cargos—perhaps they could not carry the heavy articles, but they

could carry the pallets—as you are trying to do with the C-141 today, placing them in reserve or even mothballing a few of them so that you have them in inventory?

They then would be an addition to the capacity that you have with CRAF and would move toward this 60 million tons that you need to be able to move much quicker and I think fairly economically. You get away from the operating cost.

General BURKE. At present essentially all these airplanes are in the CRAF. So if we put them in another category we are going to subtract them from that CRAF category.

Mr. HILLIS. But if those airlines sell them to South America then you have a new ball game. A lot of them are on the ground because they are not needed, they can't be operated today. They are looking to sell them as I understand it. I understand there are some at Wichita, and Boeing Seattle right now.

General BURKE. Yes, sir. I have talked with Pan American and others about that.

Mr. HILLIS. They would go at bargain basement prices as I understand it. You will never get another opportunity. Has anybody looked at this?

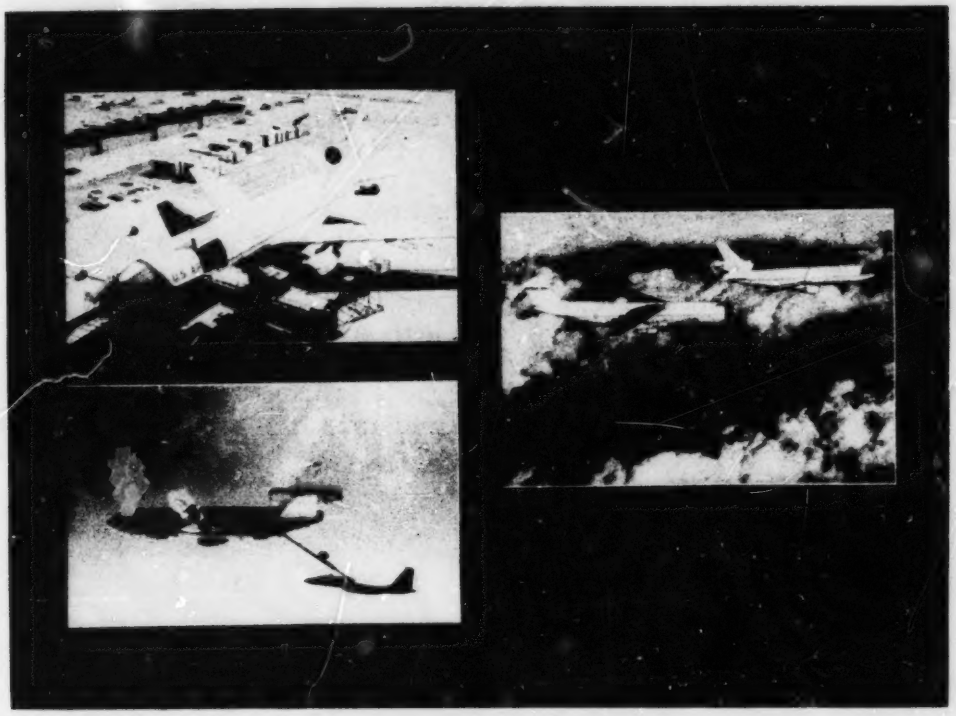
General BURKE. Yes, sir. As the airline business continues to falter we have had a number of offers and I expect we will continue to get some more. I think we ought to look at them very carefully and see if we can make economic sense out of them. I certainly don't have any objection to buying used airplanes.

Indeed in the 1981 budget we requested authority to buy seven used 707's to replace our eight C-135 airplanes in the Systems Command. We should do the same thing with freight. I don't think it would profit us to take airplanes that are already in CRAF and buying them ourselves. It is best to leave them in CRAF. But we will look at that as the opportunities unfold.

Mr. HILLIS. This is the exact point that the chairman is making.

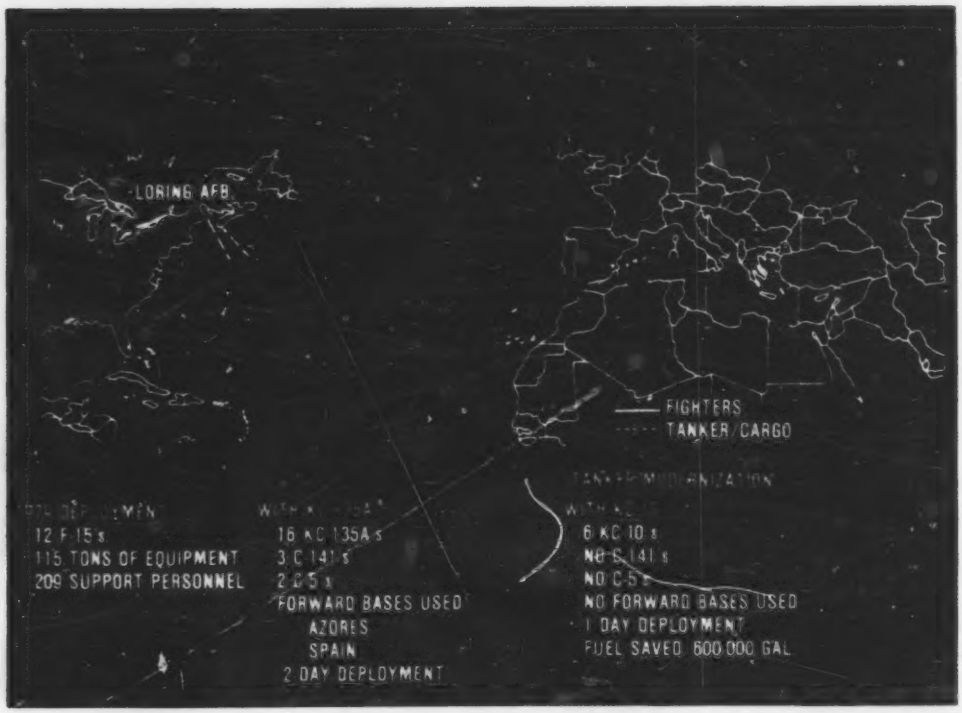
General BURKE. Back to the alternatives, we also considered the prospect of buying available wide-bodied aircraft that were currently in production which really means either the DC-10 or the 747. We concluded, fairly easily, if we were going to buy one of those we would like to stick with the one we already have in service which has already been modified for aerial refueling and it has that dual capability.

For the near term we elected the KC-10, but with the provision that we would like to go back to CRAF when and if that looks better. For the longer term these are the three choices.



I just want to say a couple of things about the KC–10. It is an excellent refueler, but it also has excellent cargo capability. We are using it today carrying MAC channel traffic, just loading the cargo on it just like a regular airlift. It does not load as easily as military airlift, but it gets the job done.

Another way it can do a great deal for airlift is by refueling C–5's and C–141's. If you can provide adequate refueling to those airplanes you can increase their productivity in some cases up to 25 percent. So that is like having a lot more of them. It does extremely well, projecting fighter forces overseas because it can go to a fighter base, load on the people and associated equipment and by refueling those airplanes take them to the Middle East, for example.



This was the actual deployment we made of F-15's from Langley to Saudi Arabia in 1979. In the middle it just shows what we used for that: KC-135's, C-141's, C-5's, forward operating bases, 2-day deployment.

Over here it shows we could have done the whole job with six KC-10's in 1 day, no forward bases.

Mr. STRATTON. I don't know whether this is classified or not, we are in open session, but I understand we are trying to get some kind of staging base in Morocco. Has that worked out?

General BURKE. I have read that in the papers. That is about all I know about it, Mr. Chairman. In my youth when I used to fly these airplanes rather than talk about them I used to operate out of Morocco and there were some very fine airfields over there.

Mr. STRATTON. Do we use Lajes still?

General BURKE. Yes, sir, Lajes is an air base.

Mr. STRATTON. Torrejon we can use except when we get into an Israeli situation.

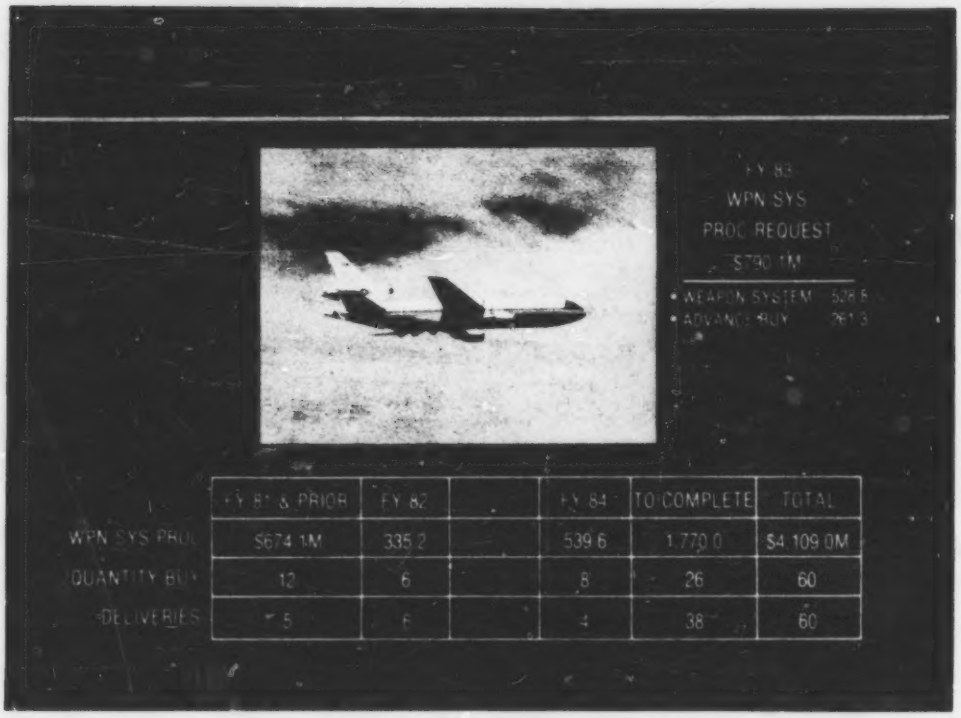
General BURKE. We were not allowed to use Torrejon in 1973.

Mr. STRATTON. The same thing applied to Lajes?

General BURKE. We did use Lages in 1973.

Mr. STRATTON. The present government has not changed that?

General BURKE. No. You never know until the event. That is why I like long-range and aerial refueling.



Congress, if you will, saved us from canceling this program in 1982 and I for one appreciate that, by adding four aircraft in the 1982 supplement which the Department sent over. There was a request for two additional, which brought that up to a total of six for 1982.

Our proposal is to buy the 44 KC-10's for which we have favorable options, 8 a year out to 1987 at which time we would buy 10. These numbers are a little confusing and even misleading. We show a big increase in 1983 and that is associated with a large increase in the advanced buy.

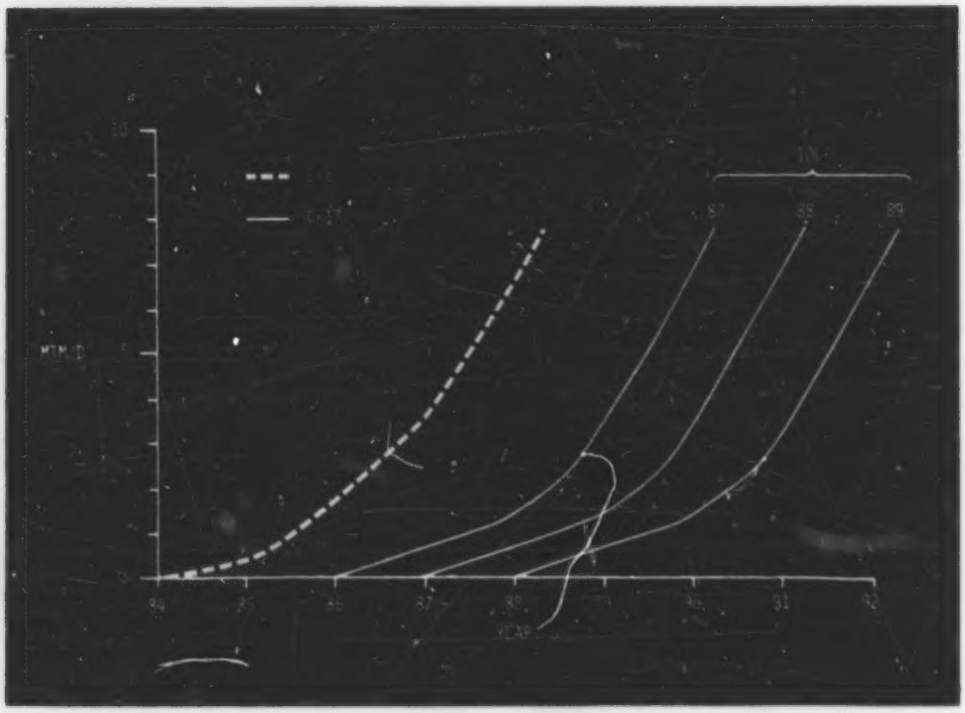
We really have not worked this out. We are working with McDonnell Douglas and will be with the committee staff to try to work out a multiyear procurement where we can tie down those 44 airplanes this year. We think we can save a half a billion dollars in cost by doing that. We will be back working out the details later. The cost is not really going up in the amounts that would be indicated if you just did that by straightforward arithmetic.

Longer Term

For the longer term the Air Force has been looking at a choice of either a C-5B or C-17. Until a few months ago we had recommended the C-17 as our preference because it is a new airplane and obviously it has better military utility. We thought it was important because it had more potential for the eventual replacement of the C-130's and the C-141's than did the C-5. We had looked at it on the assumption that the funding that had been provided at that point was about all that would be available for airlift.

On that basis there was not a great deal of difference in the availability of those two airplanes. We thought the additional capability was worth a little wait. In making our presentations to the Secretary of Defense he was struck, I think, by the urgent and compelling need for airlift, much as this committee has been, and told us to go back and reexamine that under a different set of assumptions. That was that we should fund either program at the fastest prudent pace to address the problem with a priority that it deserved.

When we did that we got a very different answer and it looked something like this.



Mr. BADHAM. I have been hearing around here and there that if the money put in the C–5 had been put in the C–17 immediately you would have delivery pretty much at the same time, within 6 months.

General BURKE. I just don't believe that that could be done in any plausible way, Mr. Badham. It would first require the Congress to reverse itself totally in the way it looked at this problem.

You will recall we asked for $81 million for CX in 1981. Congress cut that to about $35 million and told us not to spend it, go study and come back with a report, which we did.

Mr. BADHAM. We did not shoot you. You just shot yourself on that one.

General BURKE. I am not trying to look for villains or heroes. I am just trying to express what I think the practicalities are.

In 1982 we asked for a quarter of a billion dollars and perhaps due to ineptness, the net result was that Congress gave us no money in 1982 for R. & D., zeroed the C–17 line, but provided $50 million to buy available wide-bodied aircraft of the type such as the C–5, the B–747.

Mr. BADHAM. I agree with that. I would expect that if the Congress had thought that the alternative 2 years ago to CX was buying more C–5's they would have been equally, if not more greatly, horrified.

On the C–17, I think once this decision, at least across the river, has been made to go with the C–5 because it flies now and it will be sooner available and all of that, that soon one of these days in the outyears we are going to need another intratheater lifter.

Now in the opinion of the Air Force or, as you understand it, the opinion of the Pentagon, are we going to reinvent another airplane, or will we have wasted all the money that has gone into competition?

General BURKE. No, sir. Our proposal is that we continue with the C-17.

Mr. BADHAM. Continue with R. & D. this year?

General BURKE. Yes, sir. I will outline how we want to do that. It is arguable how quickly you can do the C–17. It is fairly straightforward how you can do the C–5B.

The C–5B I show on this line. I think if we were able to convince Congress that we have embarked on the C–17 and convinced them to put up 1982 money you might have been able to keep that within 2 years.

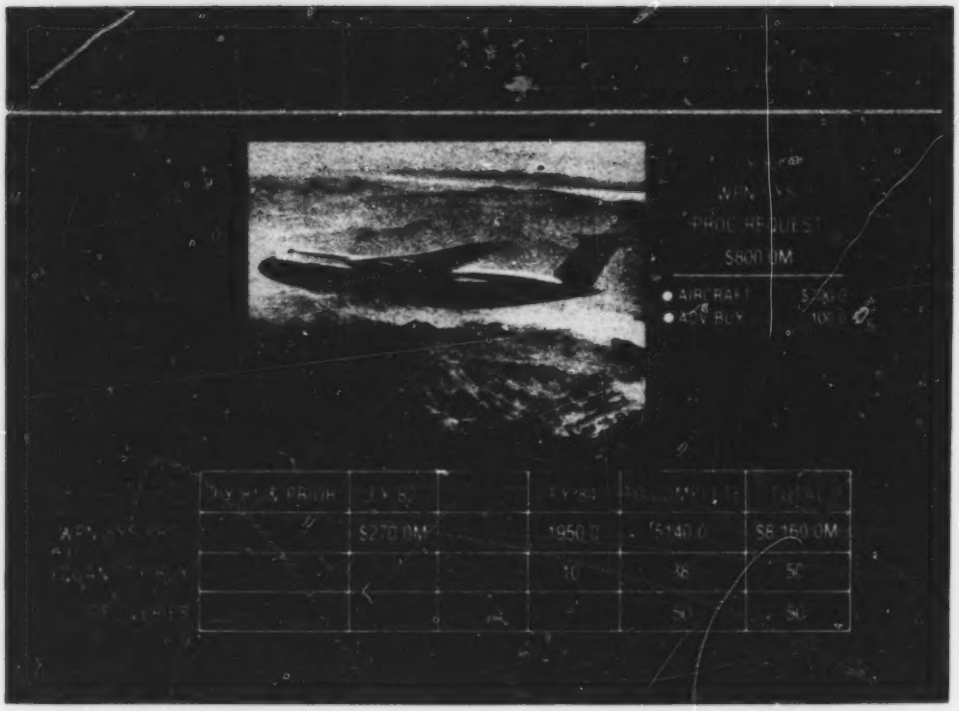
If you believe that that is not practicable, that you would have to start over again in 1983, it is probably more like a 1989 IOC. We were projecting 1988 IOC when we were asking for a quarter of a billion dollars in 1982. It is probably more likely 1989. That is not really surprising, Mr. Badham.

To begin with there is an existing base for the C–5B. That wing modification has a lot of people working, a lot of tools. The Government owns over $700 million worth of production tooling for it, some of which has to be refurbished, but that is a lot different than starting from scratch. There are a few thousand people working in Lockheed, Ga., General Electric, and all those spare parts are being provided by the vendors. There is some base.

Whereas the C–17 would be starting pretty much from scratch and necessarily has to sequentially go through research and development, production, training and then go operational, whereas the first C–5B could go right into operational use. I think intuition says there has to be some difference. You can argue about how much it is.

As I mentioned, the C–5 procurement and development history is not a happy one, but its operational history is. It is a fine airplane. It has done great work for us in all manner of missions around the world. I think one of the most striking pictures I have seen of the C–5 is the one in which Prime Minister Meir was at Tel Aviv Airport to meet it in 1973 which indicated her interest and approval of what the airplane could do.

Perhaps even more telling were the comments of the late President Sadat in his autobiography in which he said in his opinion he was doing well militarily in 1973, but he decided he had better terminate the war when he saw the C–5's were arriving in Israel, and that was a major factor in his agreeing to the cease fire.

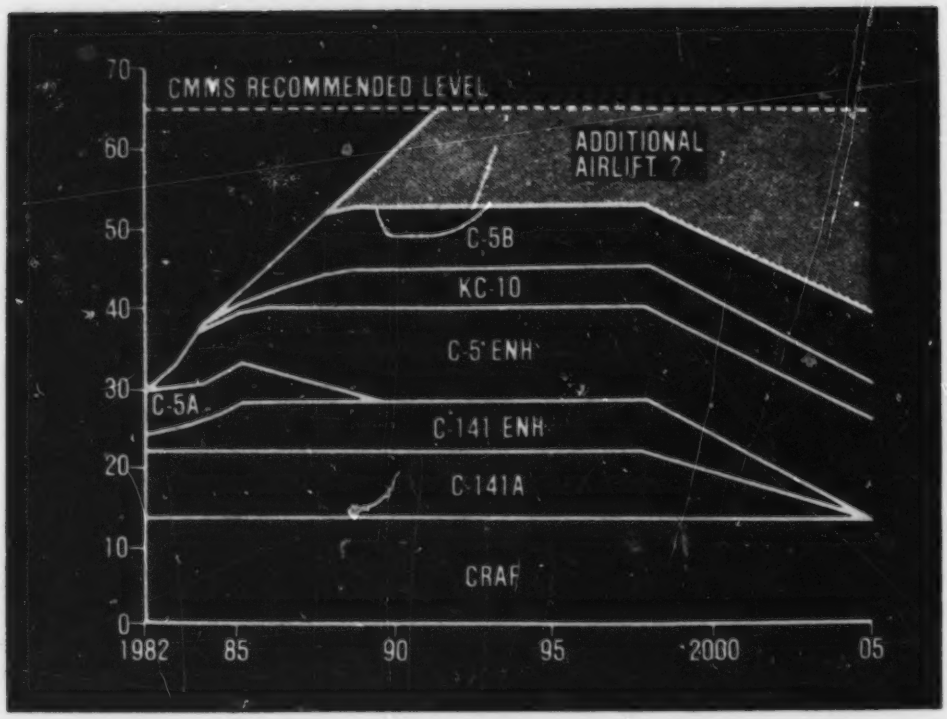


The proposal is to begin in 1982 with $270 million; $99 million of that is new money in the supplemental request. The remainder of it includes the $50 million that Congress authorized and appropriated for wide-bodied aircraft which with your concurrence we would apply to this.

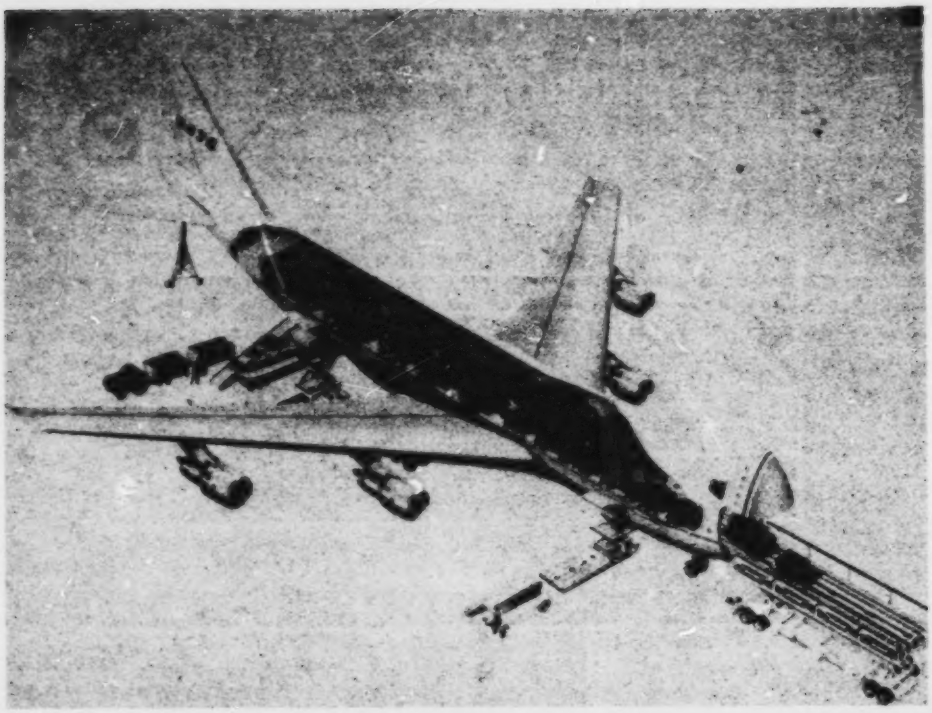
It also includes the 1980, 1981, and 1982 CRAF moneys. We will request that 1982 CRAF funds be reprogrammed for that purpose.

For 1983 we actually begin buying aircraft, the first two. Of course, the preponderance of that is associated with the initial startup cost. We would proceed down as scheduled until we have bought the 50th airplane.

Our proposal is at this point at least limited to buying the 50 C-5B's for which we have a firm fixed-price proposal from Lockheed.



The KC–10's added another 4 million ton miles a day and the C–5's add about 8. That brings us up to this level, a much healthier picture than when we started, but still a bit shy of what was recommended in the CMMS.



We will in time be looking at that. As I mentioned, we will continue to look at CRAF. If there is production available we will certainly explore that. We have included moneys in our budget for 1984 and beyond to allow for this if it develops.

The C–17, Mr. Badham, we are recommending should continue at a modest research and development level for 1982 and 1983 using the available nonobligated money that was provided in 1981. There is about $32 million of that unspent. It is authorized and appropriated for CX research and development. It will be reasonable to apply it to this purpose.

What we would like to do in those 2 years is a prefull-scale development program with which we would minimize any technical risks we could see and there aren't very many.

We would also explore things that would be of advantage to any airlifter that was built in the future such as increased use of composite materials for better range and payload. We would like to do that in 1982 and 1983.

Then as part of the 1984 budget, address where we go from there. We think the information we learn will be very valuable for the C–17 or for other purposes. We think it would be useful as we address the remaining shortfall to have the C–17 in the wings as a competitor, perhaps along with the 51st C–5B or the CRAF.

We think that eventually when we get around to replacing C–130's and C–141's we would certainly want an airplane of these characteristics. So, we are going to ask for congressional agreement to do that and I hope we will get it.

Recommendations

To summarize, and I chose that slide deliberately, these were the recommendations that the Air Force made to the Secretary of Defense, to buy the 44 KC–10's for which we have options, the 50 C–5B's for which we have a firm fixed-price proposal, but to continue to think about our additional needs and to continue CRAF funding 1984 and beyond and to continue that C–17 R. & D. as I mentioned.

I point that out because the press missed the mark very badly on this in alleging that this was directed on the Air Force. The Secretary of Defense agreed with all the Air Force recommendations and that is what the defense program is.

Sir, that completes the basic briefing on airlift. I have a couple of slides on a new relatively small program called the European Distribution System that I am prepared to talk about if the committee would like to go into that. We had some expressions of interest in this.

Mr. Stratton. Let me ask a couple of questions which I think we need to get into the record, General Burke, both with respect to this bill and the fiscal year 1982 supplemental.

The Air Force budget for fiscal 1983 requested $860 million for the initial procurement of the C–5B. In addition, $270 million for advance procurement as shown in fiscal year 1982.

I understand that the $270 million for advance procurement, however, has not been appropriated and that the delivery schedule and pricing of the C–5B depends somewhat on programing ahead early in 1982.

How does the Air Force plan to handle this funding problem? If the $99.1 million supplemental is not received, what effect would this have on the program and what could be done with the $171 million that you already have available?

General BURKE. It will of course pose some delay. It will give us a contract problem with Lockheed in that their proposal assumed those numbers and we would have to go back and do some renegotiating with them. I would very much hope that we could keep that on schedule and obviate the need to open up a contract which we view as very favorable.

Mr. STRATTON. Do you have the $270 million in there for the supplemental?

General BURKE. Yes, sir. It is made up of several parts. First, it includes the $50 million which is authorized and appropriated, to buy available wide-bodied aircraft, which we can spend 30 days after we notify you of our proposal—absent disagreement on the part of the Congress.

It includes the CRAF money that had been authorized and appropriated for the years 1980, 1981, and 1982. The 1982 money has to be reprogramed and I am told technically the 1980 and 1981 money has to be reappropriated and actions for all that are in the works.

Finally there is $99 million in new money that is part of the supplemental.

Mr. KLEIN. What is the 1980 and 1981 money? Isn't that 3-year money?

General BURKE. Mr. Klein, my understanding is that it is because the C–5B starts in 1982 and that technically you can't reprogram 1980 and 1981 money in a start that begins in the year 1982. That sounds awfully technical to me, but that is what they tell me.

Mr. STRATTON. I think we have a quorum here, do we not?

Mrs. BYRON. Mr. Chairman, I make a motion that we take a vote of the committee to go into closed session for today and 1 additional day.

Mr. STRATTON. The question is on the motion offered by the gentlewoman from Maryland. The clerk will call the roll.

Mr. KLEIN. Mr. Stratton.
Mr. STRATTON. Aye.
Mr. KLEIN. Mrs. Holt.
[No response]
Mr. KLEIN. Mrs. Byron.
Mrs. BYRON. Aye.
Mr. KLEIN. Mr. Hillis.
Mr. HILLIS. Aye.
Mr. KLEIN. Mr. Mavroules.
Mr. MAVROULES. Aye.
Mr. KLEIN. Mr. Badham.
Mr. BADHAM. Aye.
Mr. KLEIN. Mr. Leath.
Mr. LEATH. Aye.
Mr. KLEIN. Mr. Courter.
[No response]
Mr. KLEIN. Mr. McCurdy.
[No response]
Mr. KLEIN. Mr. Kramer.
Mr. KRAMER. Aye.
Mr. KLEIN. Mr. Hertel.
[No response]

Mr. KLEIN. Mr. Hunter.
Mr. HUNTER. Aye.
Mr. KLEIN. Mr. Price.
[No response]
Mr. KLEIN. Mr. Bennett.
[No response]
Mr. KLEIN. Mr. Chairman, the vote is eight ayes and no nays.
Mr. STRATTON. The motion is approved.

The other question that we want to get an answer to is that no KC-10's were requested in the October 1981 budget amendment. The Congress added four at the expense of other programs.

What purpose does the Air Force intend to serve with the supplemental request for two additional aircraft in fiscal 1982?

General BURKE. It provides I think a much better profile of activity for the company. I think it will keep the total price down. I think six, along with a little bit of commercial work they have continuing, is about the minimum to keep the overhead cost from becoming disproportionately high.

Mr. STRATTON. Of the $120 million that you have requested in the supplemental for the KC-10 how much of that is for spares and how much is for support?

General BURKE. I will have to supply that for the record, sir. It would be on the order of 10 percent. We support and maintain the KC-10 differently than we do most of our airplanes in that we will use commercial airline practices and our spares have become part of the airline pool. We do only the flight line maintenance ourselves. The rest of that is contracted for.

[The following information was received for the record:]

SUPPLEMENTAL COST BREAKDOWN FOR KC-10

In the supplemental request, the $120.0 million was divided between weapon system (two aircraft for $115.0 million) and initial spares ($5.0 million).

Mr. STRATTON. Mr. Klein.

Mr. KLEIN. General, you have one unit of the KC-10 at Barksdale and another one is going into March Air Force Base?

General BURKE. Yes, sir.

Mr. KLEIN. Will the expenses that are included in the $120 million set up another unit at some other base?

General BURKE. They would not be there, but they would be slight. There is a great deal of unutilized capacity at March even now and as we remove the B-52D's from there, there will be even more.

Mr. KLEIN. You plan to have more than six aircraft per site?

General BURKE. Yes; when we went to Barksdale we built only one facility and that was a hangar of a size to accommodate the KC-10.

Mr. STRATTON. Any other questions?

Mr. HILLIS. General, I want to return again to the general CRAF area that we were discussing earlier.

Staff informs me that two additional carriers have submitted proposals to reengine DC-8 aircraft for the CRAF program. The cost of modification will be about $15 million per aircraft and will be borne by these carriers. They ask, in return for this increased

CRAF capacity to expect business from the Military Airlift Command.

Are you aware of this proposal and what is your reply to it?

General BURKE. I just became aware of it just a few minutes before the hearing started. I am interested in it and when I get back to the Pentagon I will have a look.

Mr. HILLIS. Can you submit something for the record about it?

General BURKE. I will be pleased to.

[The following information was received for the record:]

PROPOSALS TO REENGINE DC-8 AIRCRAFT

In compliance with FAR Part 36 requirements, the DC-8-60 series aircraft must either be reengined or removed from civil service by 1 Jan, 85. This action is necessary to meet Federal noise standards.

Transamerica Airlines and the Flying Tiger Line are among the carriers who have decided to undertake this reengining. They will refurbish their DC-8-60 series aircraft and replace the old engines with the new General Electric CFM-56 engine. These improvements will take a DC-8-63F aircraft and change it into a DC-8-73F which will be 15 to 25 percent more fuel efficient, carry 25 percent more payload over a 3500 nautical mile range and fully comply with all the noise regulations.

Both Transamerica and Flying Tiger have these DC-8 aircraft in Stages I and II of the Civil Reserve Air Fleet (CRAF) and, therefore, qualify for a portion of the peacetime commercial airlift augmentation purchased by the Military Airlift Command for the Department of Defense. The reengined aircraft will have increased capability and will qualify for an increased share of this business. However, these carriers are asking for a bonus award which would qualify them for even more business. They argue that since these aircraft are important to the cargo capability provided by the CRAF, they are entitled to this incentive.

The capability of the DC-8 is recognized by the Department of Defense. However, the appropriateness of a bonus award for the reengined aircraft has not been firmly established. The Secretary of Defense has asked the Secretary of the Air Force to evaluate the proposal. A formal response will be forwarded to Transamerica and Flying Tiger in early April.

Mr. STRATTON. Any other questions? If not, why don't you proceed with that other show that you wanted to put on, General.

EUROPEAN DISTRIBUTION SYSTEM

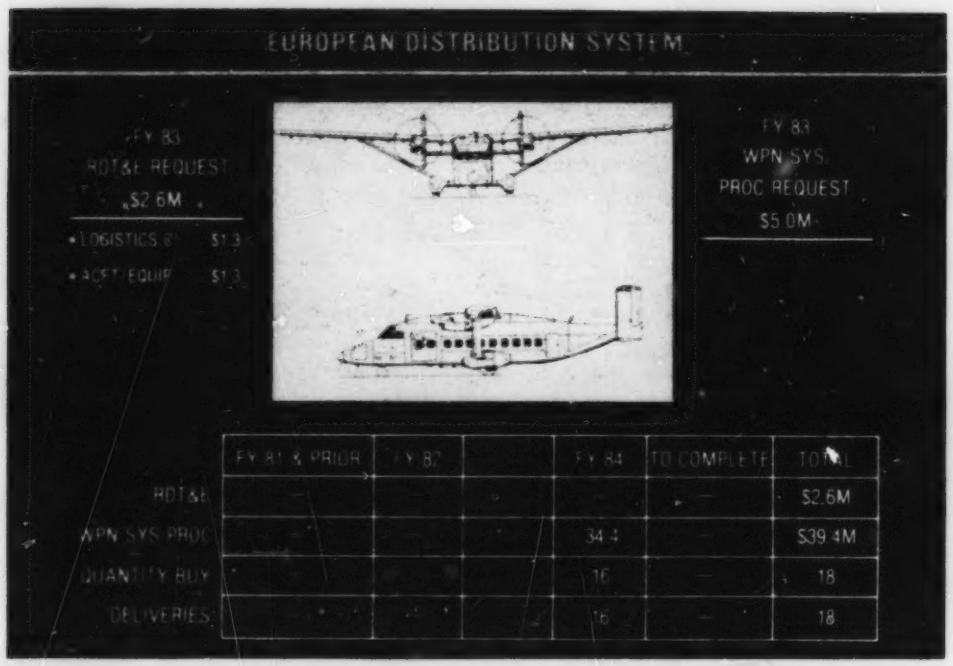
General BURKE. This is called the European Distribution System. We propose to purchase some very small airlift aircraft at relatively low cost. We have been working in the Air Force for the past couple of years, looking for ways to get everything we can out of our existing forces before buying new and more expensive ones.

I think one of the more innovative ideas we came across is the fact that the way we are arranged to fight in Europe and the way we are arranged to support our fighting forces is not a good match. We have about 20 main operating bases for fighter forces in Europe, but we have on the order of 80 subordinate bases that have to be supported with spare parts and so forth from the main bases. They are all linked together in a way that is fairly fragile.

You would expect in wartime the main bases would be attacked, some of them would be shut down for a period of time. You would expect the road network would not be something you can depend on. When you position supplies you work by averages and airplanes don't work by averages.

You invariably find you have more at this base and less at that base. An analysis has been done which leads us to believe that by having a better redistribution system of supplies and better control

we could in a typical European wartime environment create the equivalent of up to 300 fighter airplanes that would otherwise not be able to fly for want of parts.



That is the essence of the system. It is to buy 18 airplanes to deliver parts, also to buy a little command control so that you can keep track of your parts and airplanes and also to forward base more parts.

Right now we keep most of our backup supplies in the United States. We would like to move some of them to England and other locations, not too close to the battle area, but not too distant either. That is our intent.

The idea is to buy an airplane that is in production, that somebody has already built and developed. It would be a small turboprop. It could carry a 5,000-pound payload for example, a built-up F100 engine. We would propose to buy two of them in 1983. We think they will cost about $2½ million apiece.

I think it is a novel and innovative approach and one that will provide more readiness and sustainability for less money than anything that I can think of.

Mr. STRATTON. That is a commuter plane. It is a pretty good plane?

General BURKE. It is rear loading. The passenger version of it is rear loading. We have a little R. & D. to modify the equipment so that we can cradle an engine in it. They are not built for that.

Mr. HILLIS. Is this a U.S.-made aircraft?

General BURKE. It looks like there are about four airplanes that would meet the description I just gave you, one of which is United States, yes, sir.

Mr. HILLIS. I would certainly hope that in this day and age, with economic conditions that exist in this country, that we would look at procuring something of this nature here, if at all possible, if it is competitive.

General BURKE. I certainly think so, too. There appears to be a very strong candidate that is American made.

Mr. HILLIS. But you are considering some foreign made?

General BURKE. I think we should. There is only one American candidate and I think we would like to maintain competition.

Mr. HILLIS. I don't know who that is or where it is made and probably not one part is made in my district. I tell you as one Member of Congress it would make a big difference to me whether it is American made or foreign made whether or not I support this program.

General BURKE. Yes, sir.

Mr. HILLIS. Where is it made?

General BURKE. The American competitor is by a company called Aherns and they are in Puerto Rico. They have a facility at the old Ramey Air Force Base. They are just beginning a new airplane that looks like it is quite good.

Mr. STRATTON. The others are Canadian built?

General BURKE. There is a Spanish plane. Dehaviland of Canada has an airplane. I am not sure if it meets the specifications. The Israelis have one, the Spanish have one, and Short Brothers in Northern Ireland have one of that general description.

Mr. COURTER. Mr. Chairman, I ask unanimous consent to be recorded as voting Aye on that prior vote.

Mr. STRATTON. Without objection.

We have a vote on the approval of the journal. So perhaps unless somebody has an urgent question we can take a brief recess to vote and then come back and resume.

[Recess.]

Mr. STRATTON. The subcommittee will come to order.

Do we have any questions of General Burke?

Are you going to handle tactical air?

General BURKE. No, sir. We are on your schedule for next week.

Mr. STRATTON. Then we have completed everything, is that right?

General BURKE. If there are no further questions we have completed today's activity.

Mr. STRATTON. I am sorry we kept you here. I thought we had another program.

Do you have any questions, Mr. Klein, while the General is still here?

Mr. KLEIN. Yes, while he is still here.

General Meyer and General Rogers, in their testimony before the committee, have both said that they applaud the increase in intertheater airlift, strategic airlift, but they indicated that the decisions don't do much for intratheater airlift.

Since both types of airlift depend absolutely on usable runways and these runways are vulnerable, is there really a good solution to intratheater airlift as the Army tends to see it, moving large quantities of heavy outsize equipment from one part of the theater to

the other rapidly and then having the aircraft survive so that they can make multiple trips?

Is this really a doable thing?

General BURKE. I think we can do a tremendous amount of intratheater airlift with the right aircraft. I think the C–130 does a pretty good job for us now and will operate out of fairly short and unimproved fields which exist in sufficient numbers that I think it is safe to assume there will always be some. Although they might not always be exactly where you want them, they would not be that far away.

The C–17 has that as a major parameter. Probably an important distinction between the C–17 and C–5B is that the C–17 is clearly the better in that austere airfield capability.

I would hope that we will keep our C–17 program going, looking to the day when we might add some additional airlift for replacement of C–130's and C–141's.

Additionally, to get to the problem of which you speak, the situation where there is no airfield, I personally am very struck with the new tilt rotor technology that is beginning to emerge. I think that has a great deal of promise in that it provides a vehicle that can take off vertically or near vertically and then move in a horizontal way, in a way which is twice as efficient as traditional helicopters.

I think for the long term you will probably see all services moving in that direction. We are embarked on a four-service program of tilt rotor technology. That is looking into the 1990's. I think it does have a great deal of promise.

Mr. KLEIN. General Rogers seems to be worrying about moving his main battle tanks from one part of Germany to another by air. In other words, that is one of the parameters I understood of the C–17, it had to take at least one tank and all the big equipment, but tilt rotor technology would not help you there?

General BURKE. No; the tilt rotor would be used for much smaller loads than that. The C–17 would do that. To the extent that battle conditions would permit, you can do that of course to some extent with C–5's which with the re-wing will carry two M–1 tanks, if the conditions are such that you can put it that far forward.

Mr. KLEIN. With the C–17 you would almost have to have one tank per airplane?

General BURKE. I think what General Rogers has in mind is shuttling them relatively short distances, maybe a 30-minute flight from this part of the battle area to that part of the battle area to get them where the action is. A C–17 could make many trips in the course of the day.

Mr. KLEIN. Will the Air Force handle the tactical air defense that close to the battle area, in addition to all its strike missions? How many F–16's and F–15's would you have to have to defend the C–17 that close in?

General BURKE. That is almost imponderable. It would depend on the circumstances that prevail and fluidity of the battlefield. Certainly the bigger and more expensive the airplane is, the less inclined one is to let it be close enough to be at risk.

Mr. KLEIN. It is beginning to cost almost as much as a B–1B. Mr. Chairman, I have one other item.

Mr. STRATTON. Go ahead.

Mr. KLEIN. I don't know if you are ready to respond to this. If not we will submit it for the record.

The Air Force as executive agent of DOD has proposed legislation, H.R. 5327, that would authorize the Secretary of Defense to enter into cooperative military airlift agreements with allied countries. This legislation has been referred to this subcommittee.

Could you speak to the requirement for this legislation and what the legislation would permit DOD to do if it is passed that DOD cannot do under current law?

General BURKE. No, sir, I am not prepared to speak to that, but I will get myself prepared and I will get back in touch with you and submit something for the record. I will talk to you personally as well.

Mr. KLEIN. Thank you.

[The following information was received for the record:]

AIR FORCE SUBMITTED LEGISLATION—H.R. 5327

Allied airlift cooperation has been practiced since the Second World War. It was formally approved by the President in 1947 as a measure contributing directly to the efficiency of joint US-Canadian defense arrangements. This measure provided for the reciprocal carriage of service personnel of each country in the military airplanes of the other country. In other words, if a Canadian airplane was going the same way as our service member and it had unused space, it would transport our service member. The same applied to our aircraft and their troops. Cooperative airlift made sense because we could do more with our resources and, as a result, by the early 1970s we had concluded cooperative airlift agreements with the Royal Air Force, Royal Canadian Air Force, the Royal New Zealand Air Force, and the Royal Australian Air Force.

Our need for this legislation was surfaced in the mid-1970s by the Department of Defense General Counsel. In their review of a proposed cooperative airlift agreement with the Republic of Germany they expressed the opinion in 1977 that no legislative authority existed for such an agreement. In the opinion of DOD General Counsel, the only authority for furnishing airlift to a military ally is Section 21 of the Arms Export Control Act (22 USC 2761. Under the terms of that act the offset of airlift charges is not authorized and we are required to charge allied governments a tariff rate that recovers all fixed costs as well as variable costs. This full cost recovery rate, known as the non-US Government or Foreign Military Sales (FMS) rate is roughly twice the rate we charge ourselves. For example, we would bill the US Navy $1,214 for a C-130 flying hour, but would have to bill the Royal Air Force $2,888. The question always arises, should our allies pay the higher rate? The answer is that we would be only offering our allies that excess capability that otherwise would go unused. By the same token, we would be acquiring the right to use the excess capacity of allied military aircraft at the same rate. Perhaps of even greater importance, we further NATO rationalization, standardization, and interoperability by enhancing our ability to obtain maximum use of available airlift assets, a matter which will be of critical importance in wartime. On the other hand, at the higher rate allied air forces will not exchange airlift with us.

In the same document in which the Department of Defense advised us to their Counsel's final ruling they also requested that the Air Force seek legislation which would permit the DOD to provide airlift for allies at rates it charges DOD components. Essentially, H.R. 5327 is the same as the proposal submitted to the 96th Congress, which was not acted upon.

Presently, the authority for entering into cooperative military airlift agreements is geographically limited. The 1980 NATO Mutual Support Act, although materiel oriented, does provide authority for agreements with NATO nations, but only for transportation services within Europe and adjacent waters. Under this authority, once the country-to-country general logistics agreements are concluded, cooperative airlift arrangements can be entered into. However, these agreements with NATO nations could not include transoceanic carriage.

H.R. 5327, which is virtually identical to the Air Force proposal submitted to the Congress on October 7, 1981, would authorize the Secretary of Defense to enter into

bilateral or multilateral agreements with the governments of allied countries for the reciprocal transportation of the personnel and cargo of the military forces of one country on aircraft operated by the military forces of the other country. Transportation would be provided on a space available, noninterference basis so scheduled flights of any participating country would not be increased solely to accommodate the requirements of another country. Cargo and passengers moved by each country would be tallied and imbalances settled by country-to-country payment. H.R. 5327 and the Air Force proposal provides for the settling of accounts on a quarterly basis. When this proposal was drafted, it was modeled after the NATO Mutual Support Act which also has quarterly accounting. Since our proposal was submitted last fall, we came to the conclusion that it would be more appropriate and far less of an administrative burden if that provision were changed to require a settling of accounts not more frequently than once per year. We do not expect the dollar amounts to be large and believe that little purpose would be served by the quarterly requirement in H.R. 5327.

We believe that the Secretary of Defense should be given authority to enter into cooperative agreements in order to promote greater interoperability and improve the utilization of airlift resources. This can be done with no additional cost.

a. Airlift cooperation among allies will promote interoperability by practicing in peacetime what we will need to do in wartime. In a crisis demands on transportation, supply, maintenance capability and a myriad of other logistics resources are most urgent. We have developed standardized procedures with NATO and English speaking countries for packaging, documenting, and loading air cargo on transport aircraft. These air standardization agreements need to be regularly exercised in peacetime for unit level personnel to effectively use them in wartime. The full benefits of standardized or interoperable equipment will be lost unless interoperability is also built into airlift so that troops and equipment can be moved swiftly to wherever needed.

B. Utilization of allied aircraft will be improved through the productive use of unused capability on routes served by both nations. On occasion, by marrying requirements, some nonproductive deadhead flights can be avoided. For example, in Europe both we and the Germans use the NATO Air Missile Firing Installation on Crete for live-fire training of ground-to-air missiles such as the Army's Chaparral. If a German air defense unit is scheduled to rotate from Crete and a US unit is scheduled to replace it, the Luftwaffe would be flying empty C-130 transports from Germany to Crete, picking up their troops on Crete and flying back full. We would be flying full C-130's from Germany to Crete with the US replacement unit, dropping them off at Crete and returning home empty. With airlift cooperation, this job could be done with one airplane by marrying both nations' deadhead flights. Our Australian and New Zealand cooperative airlift agreements provide still another example. In the South Pacific, frequency rather than tonnage typifies our airlift requirement. Prime examples are mail and high value spares. Often the movement requirement is satisfied on a more timely and cost effective basis when delivery is made by utilizing an Australian or New Zealand airplane that is going to the same place as our cargo.

c. In addition to promoting interoperability and utilization, the enactment of H.R. 5327 makes good sense in these times because it would cause no increase in the budget requirement of the Department of Defense.

The Air Force, on behalf of the Department of Defense, strongly supports H.R. 5327. Its enactment will enable us to take one more step in the direction of cooperation with our allies.

Mr. STRATTON. Mr. Chase.

Mr. CHASE. General Burke, I would like to get back to CRAF for a minute.

When the committee started to work last year on the CRAF effort we were told by Air Force representatives that the estimated price of CRAF mods was about $15 million. You said this morning they have gone up considerably, $20 to $25 million.

Do you know what the basis is for that increase?

General BURKE. For one thing we, and Congress encouraged us in this direction, wanted to go fixed price, one-time payment and not have any Government obligation of an indefinite nature pending. Airlines, given their current financial plight, are not prepared to

take a whole lot of risk. They wanted a contract that wasn't one where they were going to lose money on it. I think they factored in all the contingencies and unknowns that anybody could think of.

Second, they were charging a considerably higher price for downtime than I think we had expected. We thought that given the fairly depressed state of the industry they would not mind giving up airplanes all that much.

Again I think they assumed the airplanes would be fully productive during that period and charged us accordingly.

Mr. CHASE. Do you see that cost coming down? Would we purchase it at $25 million a copy?

General BURKE. I think $25 million is beyond my threshold. I don't think one can state precisely where it ceases to be cost effective. I thought $15 million was a doable thing. $25 million I thought was not.

There is another factor I should mention. That is that the preponderance of the proposals were for DC-10-10s. There were only a handful of DC-10-30's and no B-747's that were responsive.

Mr. CHASE. Because of cost?

General BURKE. On the 747 for some reason, and I am not quite sure what, we were dealing with the airlines and the airlines had to go out to Boeing and McDonnell Douglas to get the conversion cost. The way Boeing presented the information to the airlines would not allow them to make a fixed-price proposal. So they were submitting cost-plus proposals on 747's which made them nonresponsive.

For the DC-10's the data Douglas provided did allow them to make a fixed-price proposal, but virtually all the airplanes that were proposed were 10-10's which are very short range and not attractive.

Mr. CHASE. Thank you very much.

Mr. STRATTON. General, you are handling all of the airlift requests in the 1983 budget in your testimony, is that right?

General BURKE. Yes, sir, I haven't talked about it.

We also have about $155 million for modifications to the 563 C-130's that we have, mostly associated with the wings.

Mr. STRATTON. What I wanted to particularly discuss is what do you have in the budget for C-130's?

General BURKE. We don't have any procurement request to buy new C-130's.

Mr. STRATTON. You have eight C-130's from the last 1982 budget.

General BURKE. In fiscal year 1982 Congress authorized and appropriated money for eight C-130's.

Mr. STRATTON. We put the C-130's into the bill here in the House and in this subcommittee because of the failure of the Defense Department to ever come up and make any specific request for the Guard and Reserve.

Whatever old clothes you have that wear out you are happy to pass along to the Reserve, but you never know when they are going to wear out and the result is that the Reserve and the Guard exist on hand-me-downs. Irrespective of the problems that we have with personnel, at least in the Army Reserve and Guard, we are stopped from doing the ideal job because we don't have the equipment.

So we put six in and when the President came along with his supplemental request all of those went out, but we succeeded, with the help of some of the representatives from the Georgia area, in getting eight back in.

I think you were the only officer over the grade of colonel who wasn't in my office here the other day when the Chief of Staff came in to discuss this matter.

So, this is why I bring it to your attention because you are coming in here and asking for C-130's or at least not additional 130's you say, but some improvements, and I am concerned about what is happening to our C-130 growth.

The Air National Guard unit in my district, for example, in Schenectady, operates the supply arrangements, as I indicated to you the other day, up to the Greenland Ice Cap. They are the only unit that has C-130's with skis.

They have to maintain, as I understand it, to do the job, four aircraft with skis, and four without skis, and those planes look as though they must be older than the B-52's. They are certainly not the most silent aircraft in the fleet and they look as though they have most of their miles on the speedometer. But nobody seems to be interested in upgrading these aircraft.

I don't know what you are going to do with the eight from the 1982 budget, but it seems to me that some of these airlift units in the Guard that are performing a regular day-after-day service for the regular Air Force ought to get the improved equipment.

My understanding is that there is in fact a new configuration of the ski model which would seem to be appropriate up there in Schenectady.

Is there any intention or desire to make some of those available to the Guard?

General BURKE. I will go back and take a look at the specific question of that unique unit with that ski mission and see what the plans are and report back to you on it.

As a general proposition, Mr. Stratton, I feel very strongly that the total force concept is right and I think our Guard and Reserve forces represent forces that are of equal value to the Active Force.

In fact, when we come over next week to talk about tactical air, I plan to show you a couple of slides. I think you will be pleased with the contribution that the Air Force Guard and Reserve units make.

Mr. STRATTON. I am aware of that. They are unique in the Reserve structure, I think; the Guard and Reserve integrated with the regulars in a total force concept. My only concern is that while they do all of the jobs they seem to come in at the tail end on the equipment, that is all.

General BURKE. They generally do lag behind and I think it is probably right that we work the bugs out of things in the Active Force in the first couple years, but we are putting A-10's right off the production line into the Reserve forces and we are going to put F-16's right off the production line in the Reserve forces, we have already done that with A-7's.

Mr. STRATTON. I just want to put in a plug for the C-130's right off the production line.

General BURKE. All that Congress has provided us in recent years have gone to the Reserve forces. I would think that would

continue. But I would like to look specifically at that ski unit and see how we stand on that.

Mr. STRATTON. I wish you would.

[The following information was received for the record:]

C-130 SKI MODEL FOR ANG

The ski equipped 109th Tactical Airlift Group (ANG) located at Scher.ectady County Airport, New York, performs the only ski mission for the Air Force. Their C-130D aircraft are the latest aircraft of the C-130A production line and were delivered to the Air Force in 1957. The C-130D more than adequately performs the mission in support of the DEW Line radar stations located on the Greenland ice cap. The ski mission is projected to cease in the late nineteen eighties with the planned relocation of the sites. The Air Force has no plans to buy new ski equipped C-130's since there are no anticipated ski requirements beyond that time.

Mr. STRATTON. That is all the questions we have. Thank you very much. You have done very well here in two successive days and it has been very helpful.

When is it we get to tactical air?

General BURKE. On March 11th. That will be an interesting session. It always is.

Mr. STRATTON. Thank you very much.

[The following questions were submitted to the witness to be answered for the record:]

LIFE CYCLE COSTS OF THE CRAF VS. OVERALL COSTS OF PROCUREMENT AND OPERATION OF NEW A/C

QUESTION. Have you compared the life cycle costs of the CRAF enhancement program with the overall cost of procurement and operation of new aircraft?

ANSWER. Yes, and the life cycle cost of CRAF enhanced aircraft is always less than procurement and operation of organically owned aircraft. However, in the recent request for proposal to industry for CRAF enhanced aircraft, viable offers were only received from three carriers for 49 DC-10-10s and 4 DC-10-30s.

This option was rejected for the initial increment of added airlift capability for several reasons. The most notable are that DC-10-10s are range limited (requiring two ground refuelings to reach certain crisis destinations) and that the projected cost was much higher than expected. Since these CRAF airplanes would be available only in a declaration of national emergency (meaning they may not be available in certain critical scenarios), the dollar cost and critical requirements dictated that we seek a more responsive alternative.

The Department of Defense is not, however, foreclosing the possiblity of CRAF modifications, particularly for new production wide-bodied, long range aircraft. Funds for this purpose are contained in the FY 83-87 Five Year Defense Program. Airline proposals for modification of new or existing aircraft will be evaluated on their individual merits in terms of availability, relative cost, and contribution to national security in a declared emergency. It is hoped that the contracting authority provided in the FY 1982 Defense Authorization Act will make CRAF modifications less risky for the airlines and therefore, less costly to the Department of Defense.

FUNDING PROBLEM FOR C-5

QUESTION. The Air Force budget for fiscal year 1983 requested $860 million for the initial procurement of C-5B aircraft. In addition, $270 million for advance procurement is shown in the fiscal year 1982 column. I understand that the $270 million for advance procurement has not been appropriated and that the delivery schedule and pricing of the C-5 depends somewhat on a program "go ahead" early in 1982.

How does the Air Force plan to handle this funding problem? If the $99.1 million supplemental is not received, what effect would this have on the program? What could be done with the $171 million already available?

ANSWER. The firm fixed price of $4.9 billion in constant FY 81 dollars, as quoted in the Lockheed proposal, is insensitive to reasonable adjustment to contract go-ahead and FY 82 funding. Total program costs will increase because of inflation effects if the FY 82 funding request is not fulfilled until later years. The start-up rate will also be reduced if the full $270 million is not provided in FY 82. The Air Force can negotiate options that allow for uncertainties in funding during the start-up period. If only $171 million of the $270 million is provided, the delivery of the

first aircraft would be delayed by an estimated three to four months. Delays in program go-ahead essentially result in a day-for-day slip in the delivery schedule.

INTERTHEATER AIRLIFT AND INTRATHEATER AIRLIFT

QUESTION. General Meyer and General Rogers have both welcomed the additional intertheater airlift that the C-5 and KC-10 will provide but they have also stated that this decision does little for the intratheater airlift problem. Since both inter- and intratheater airlift must depend on usable runways which are highly vulnerable to interdiction, is there, in reality, any good solution to the intratheater airlift problem.

ANSWER. Yes, there are good and reasonable solutions to our intratheater airlift problem. Part of the risk to airlift operations is the number of airfields available for operation. Consequently, we design intratheater aircraft to operate routinely from 3000 foot long runways since there are six times as many runways in that category than in the 5000 foot or greater range. These additional runways provide flexibility and increased probability of success. In addition, military requirements dictate the capability to airdrop and use Low Altitude Parachute Extraction (LAPES) to deliver needed material if runway operations are denied.

One of the most important factors for airlift operations is control of the air battle. In all our planning, we first move fighter forces to relatively secure airfields. We follow them with light ground forces to secure other airfields for airlift operations. Once local air superiority is achieved and airfields secured, airlift aircraft can begin to operate in forward areas. Another consideration is selection of airfields to be used by airlift aircraft that are outside the effective range of enemy artillery — at least 15 to 20 kilometers from the FEBA. In our planning we do not use airfields that are within range of enemy artillery or enemy anti-aircraft weapons associated with the front lines. In the final analysis, the tactical situation will determine intratheater airlift requirements, and mission importance will be a key factor in determining acceptable risk for the use of airlift aircraft.

AWARD OF C-5 CONTRACT TO LOCKHEED

QUESTION. I note that the Air Force intends to award the C-5 contract to Lockheed in June of 1982. What are the features of Lockheed's firm fixed price offer with respect to the funding profile, the contract date and delivery schedule? How sensitive is the firm fixed price to the advance procurement funding and the schedule?

ANSWER. The Lockheed proposal is a firm fixed price of $4.9 billion in FY 81 dollars for 50 aircraft. The firm fixed price in constant dollars is insensitive to reasonable funding and schedule changes prior to contract award. The required funding and quantity profiles in then year dollars as identified in the FY 83 President's Budget are:

	1982	1983	1984	1985	1986	1987	1988	1989	TOTAL
TY $*	270	800	1950	1960	2455	725			8160
Quantity		2	10	12	20	6			50
Delivery				4	10	13	21	2	50

* Does not include funds requested for initial spares. All then year dollar cost are subject to change with changes in inflation estimates.

The total program costs and delivery schedule will change if FY 82 funding is reduced. The effects of inflation will cause the total program costs to increase if FY 82 funds are moved to later years. If start-up activities are slowed because of lower FY 82 funding, the schedule will slip, depending on the amounts provided and the contract award date.

C-5 SPARES

QUESTION. $60 million is requested for C-5 spares for fiscal year 1983. Are these spares intended to support only the two aircraft to be bought in fiscal year 1983?

ANSWER. No. The C-5B delivery schedule calls for 4 aircraft to be delivered in FY 85 and 14 in FY 86. The $60 million includes full initial spares support for the 2 aircraft to be bought in FY 83 plus spares which have longer than a 24 month lead time needed to support FY 85 and FY 86 deliveries.

QUESTION. Will the Air Force contract for the spares for all 50 aircraft on the same contract for those aircraft so as to achieve savings? If not, why not?

ANSWER. No. Only peculiar air vehicle spares will be procured on the same contract. Engine spares will be procured directly from the engine manufacturer. Common air vehicle spares will be procured through normal AFLC replenishment spares channels. Procuring all spares directly from the prime would not be cost effective due to prime contractor loadings. The above method represents the most cost effective method of procuring spares.

GOVERNMENT INVESTMENT IN C-5 TOOLING

QUESTION. How much of the Government investment in C-5 tooling for both the prime and subcontractors is accounted for and serviceable today? What is the non-recurring cost to refurbish all of the tooling and set it up for production?

ANSWER. Prior to contract award, the Air Force will conduct a tooling survey to substantiate the cost basis for the contract as part of the required audit and price analysis process. Initial reviews have been conducted and early results indicate that a majority of the tooling is available and either currently in use or serviceable. The Lockheed proposal allocated over 3 million manhours to refurbishment, replacement and set-up of tooling. The estimated start-up costs for tooling will be thoroughly reviewed and evaluated prior to program go-ahead.

LOCKHEED PROSPECTS FOR LONG-TERM EMPLOYMENT

QUESTION. Where will Lockheed find the 6000-8000 additional aerospace workers needed to produce the C-5B? What are their prospects for long-term employment?

ANSWER. The available manpower pool within the state of Georgia appears adequate to accommodate the majority of C-5B production

requirements. Some specialty skills, such as tooling, could be in short supply locally, but are available for recruiting in other parts of the country. Based on phasing of current and planned production programs at Lockheed Georgia Company (C-141B, C-130, C-5A Wing Mod, and C-5B) from 1982 through mid 1986, there should be an increasing manpower demand, leveling off through 1989.

IMPACT OF ADDING 50 C-5Bs TO THE MILITARY AIRLIFT COMMAND

QUESTION. What is your assessment of the impact of adding 50 C-5Bs to the Military Arilift Command inventory on the peacetime contract airlift by commercial cargo carriers?

ANSWER. NONE. We have no plans to alter the commercial share of the DOD cargo or passenger business.

OPERATIONAL COSTS IN THE NEW AIRCRAFT PROCUREMENT

QUESTION. Have operational costs been considered in the new aircraft procurement proposals of the Air Force? In other words, have all costs been considered over the life cycle of the aircraft?

ANSWER. During analysis of airlift alternatives, life cycle cost estimates were a major factor. Although operational costs are difficult to project, they have been considered in all our airlift procurement decisions.

MISSION OF THE C-5

QUESTION. The Army seems to want an aircraft that can carry vast quantities of outsized equipment from one battle area to another, to land the aircraft on an austere air field close to the battle area, to load and unload the aircraft quickly, and still have the aircraft survive. Going back several years to the beginning of the C-5 program, this was to be the mission of the C-5. What has changed over the years to require different aircraft characteristics?

ANSWER. Nothing has changed over the years to require different aircraft characteristics. The Army still needs to rapidly move forces around the battle area; to land at available forward austere airfields; to unload and load quickly; and to have items delivered by airdrop or Low Altitude Parachute Extraction (LAPES) methods when airfields are denied. While many of the characteristics described above may have been part of the C-5 design program, operational testing and experience has proved the C-5 will not accomplish all of these things.

The C-5 is incompatible with small austere airfield environments, not because of its landing characteristics, but because of its limited ground maneuverability. The lessons learned from the operational experience of the C-5 were used in developing the C-X Mission Element Need Statement and Request for Proposal which resulted in the C-17. While there have been no major breakthroughs in airlift technology in the last 15 years, there have been constant improvements that now allow us to build an aircraft that can routinely carry outsize cargo over intercontinental ranges directly into small, austere airfields.

CRAF ENHANCEMENT PROGRAM

Question: In view of the high cost of the proposed procurement program, why can't a CRAF enhancement program, based on current aircraft (rather than new), be reexamined for FY 83, assuming the cooperative with the airlines and aircraft manufacturing companies?

Answer: The Air Force intends to take advantage of attractive offers for the CRAF Enhancement Program if they materialize. Funding for the program was delayed until FY 84 in recognition of fiscal constraints in FY 83 and the need to fund more critical airlift mobility programs. In light of new CRAF Enhancement Legislation passed as part of the FY 82 Defense Authorization Bill, it is possible that more attractive offers could be formulated. Since CRAF enhancement still represents the most cost effective source of additional bulk/oversize cargo airlift for use during an emergency requiring full mobilization, the Air Force will respond appropriately based on the cost, capability and availability of offered aircraft. The Air Force currently has no plans for an FY 83 program. However, FY 83 funding may be considered in response to an attractive offer.

PRIVATE INDUSTRY PARTICIPATION IN CRAF

Question: We understand that the aircraft manufacturing companies and the airlines are still interested in participating in the CRAF program and are submitting new proposals to the Department of Defense. Will the Air Force consider these new proposals for inclusion in the FY 83 DOD budget?

Answer: Response to the April 1981 Request for Proposal for CRAF enhancement demonstrated considerable support from both airlines and aircraft manufacturers. At present, airline interest remains high in spite of the series of disappointments associated with the program. They have maintained their enthusiasm because the program's lump sum payment to cover additional operating costs represents a badly needed infusion of cash. The manufacturers will probably go along with the carrier's desires. However, the Air Force currently has no firm indication of any unsolicited proposals.

The CRAF Enhancement Program still represents the most cost effective source of additional bulk/oversize cargo airlift for use during an emergency which calls for full mobilization. The Air Force currently has no plans for an FY 83 program. However, FY 83 funding may be considered in response to an attractive offer. In addition, a Request for Proposal will be issued in time to make use of FY 84 funds.

MINOR TECHNICALITIES

Question: The commercial airlines can provide wide-body capacity considerably faster than your procurement program. Aren't there only minor technicalities precluding the Air Force from taking advantage of this?

Answer: The CRAF Enhancement Program could begin to increase the amount of commercial airlift augmentation available within 18 months of a program start. And, if the new CRAF Enhancement Legislation results in more attractive offers, there are only minor technical problems associated with taking advantage of this

opportunity. However, fiscal constraints combined with the availability and capability of recently offered aircraft have prompted the Air Force to proceed cautiously with this program. Latest offers for the retrofit of existing aircraft were allowed to lapse because of high cost ($19 - $23 million for a DC-10 compared to a $12 - $15 million estimate), lower relative capability of the DC-10-10s offered and availability restrictions due to the need to place these aircraft in Stage III of the CRAF.

CRAF enhancement remains the most cost effective source of additional bulk/oversize cargo airlift for use during an emergency which calls for full mobilization. However, this fact must be balanced against the need for airlift to respond to other contingencies. If more attractive offers materialize, a lower cost per unit of capability provided could be sufficient to overcome program limitations and prompt the Air Force to proceed.

C-5 VS C-17

QUESTION. If early availability was the major issue in selecting the C-5 over the C-17, why not acquire commercial wide-bodies?

ANSWER. The CMMS recommended the addition of at least 10 million ton-miles per day of outsize capable intertheater airlift. In-production commercial wide-bodied aircraft do not add significant outsize capability but can provide a near-term increase in oversize/bulk capability. However, commercial aircraft would form a unique fleet for the Air Force to support. Further, commercial aircraft lack certain features desirable for the efficient transportation of military equipment:

- Full cargo compartment cross-section loading openings
- Adequate cargo compartment floor strength
- Integral, self-deployable cargo ramps
- Truckbed-height loading
- Drive-on/drive-off capability
- High-flotation landing gear
- In-flight refueling

In 1978, the Air Force concluded a competition between the B747 and the DC-10 to select the best commercial wide-bodied aircraft for the dual role of air refueling tanker and cargo airlifter. A version of the DC-10-30CF, the KC-10, was selected. The KC-10 has the near-term availability advantages of a commercial freighter, and its dual role versatility compensates for the disadvantages of commercial aircraft. The Air Force now has the training and support base to field the KC-10. The KC-10 is a unique mobility asset that can be used purely as an oversize/bulk airlifter, it can air refuel C-141 and C-5 aircraft (thereby increasing productivity/some mission payloads as well as reducing congestion at/dependence on en route bases), and it can refuel deploying tactical fighters while simultaneously carrying their support equipment.

OPTIONS FOR NEAR-TERM AIRLIFT

QUESTION. What are your options for near-term airlift if the Congress does not approve your proposed funding for the C-5B?

ANSWER. The near-term decision was based on increased funding availability from FY 82-87. There is no other near-term option for

outsize cargo capability without the proposed funding. The only feasible near-term options for bulk and oversize cargo capability would be the CRAF Enhancement program and/or procurement of some form of in-production aircraft.

DOD CONCERN OVER RESPONSIBLE CONTRACT WITH LOCKHEED

QUESTION. There has been reportedly concern within the DOD over being able to negotiate a responsible contract with Lockheed, since their unsolicited proposal offered the Government none of the protection offered under standard procurement practices. How do you plan to ensure that schedules are met, and that the performance is at least equal to the existing C-5As? Are you planning to sign contracts with Lockheed prior to completion of this year's appropriation action?

ANSWER. The Lockheed Unsolicited Proposal, while requiring modification/clarification of its terms and conditions, did offer the protection afforded under standard procurement practices. Further, our Aeronautical Systems Division is continuing to evaluate the unsolicited proposal and will negotiate the C-5B contract in accordance with prescribed DOD procedures. Cost reporting will be provided to the Air Force by Lockheed and will provide insight into the delivery schedule and financial health of the contract.

Aircraft performance should be equal to or greater than the C-5A since the C-5B is fundamentally a C-5A with Air Force approved ECPs (including the modified wing) and product improvements. However, an expanded Lockheed flight acceptance test was offered as a part of the unsolicited proposal and will be incorporated into the C-5B production contract.

Our $270 million request for FY 82 requires a combination of reprogramming, reappropriation, and supplemental actions that must be approved by the current session of Congress. The first increment of this total is requested in a $97.7 million reprogramming action forwarded to Congress for approval on March 25, 1982. If this reprogramming is approved, we intend to award a long lead preliminary production contract to protect the delivery schedule which served, at least in part, as the basis for the SECDEF decision.

$860 MILLION PROCUREMENT REQUEST FOR C-5

QUESTION. How did the Air Force arrive at the $860 million procurement request for the C-5 for fiscal year 1983? Are the fiscal year 1982 and fiscal year 1983 non-recurring costs spread over the entire 50 aircraft, or will they be charged to the 2 aircraft planned for fiscal year 1983?

ANSWER. $800 million of the procurement request covers Lockheed-Georgia Company proposed costs for conducting the C-5B program and other government costs incident to the program. Lockheed cost items are derived from their unsolicited proposal and include both recurring and non-recurring costs. The exact breakout of non-recurring costs will not be available until formal contract negotiations can be conducted. Two C-5B aircraft are fully funded in FY 83. The remaining $60 million of the procurement request is for initial spares.

SUBSTANTIAL AIRLIFT SHORTFALL

QUESTION. Even with the Air Force's proposed procurement program there will still be a substantial airlift shortfall. Why shouldn't there be a combination of the new Air Force airplanes and modified commercial airliners under the CRAF program?

ANSWER. The Air Force airlift enhancement program does place near-term emphasis on procurement of C-5Bs and KC-10s. The Air Force has not, however, foreclosed the possibility of future CRAF cargo modifications, particularly for new production wide-bodied, long range aircraft. Future proposals for providing additional bulk/oversize capability will be evaluated on their individual merits in terms of availability, relative costs, and contributions to national security in a declared emergency.

Mr. STRATTON. We stand adjourned until Tuesday at 2 p.m.

General BURKE. Thank you, Mr. Chairman.

[Whereupon, at 11:50 a.m., the subcommittee adjourned, to reconvene at 2 p.m., Tuesday, March 9, 1982.]

ARMY AIRCRAFT PROCUREMENT

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Tuesday, March 9, 1982.

The subcommittee met, pursuant to notice, at 2 p.m., in room 2212, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

This week the subcommittee will be conducting oversight hearings on tactical aircraft and missile programs in the fiscal year 1983 budget. This afternoon we will be receiving testimony on Army aircraft programs.

Because our time is limited, we have asked that detailed statements be submitted for the record and that the witnesses summarize their remarks, concentrating on the key issues in the major programs, also with specific reference to the cost figures involved.

Although Army aircraft is one of the smaller procurement accounts—$2.75 billion—it is growing rather dramatically with a 40-percent increase over fiscal year 1982. This reflects the transition from R. & D. to procurement of the Army's modernization program. The most controversial of these new programs is the new attack helicopter, the AH-64 Apache, which we will review in depth tomorrow morning.

The focus of today's hearing will be on the Black Hawk, particularly in the context of its readiness for multiyear procurement; the AHIP, the interim Scout helicopter, which enters procurement this year as the down payment on a $2.3 billion program; and the CH-47D modernization program.

Because of the committee's longstanding interest in providing modern attack helicopters for the Army National Guard, we will also be interested in how the Army has responded in the budget to congressional direction to get on with modernizing the Guard, and, specifically, to advise the Congress of which particular items it is providing to the Guard or turning over to the Guard and the Reserve.

Our first witness will be Lt. Gen. James Merryman. He will be followed by Brig. Gen. Ellis Parker, who will briefly summarize the threat and the operational requirements. After this overview Col. William Forster and the project managers will provide the details on the 1983 program.

Mr. Hillis, do you want to make any statement or comments on these hearings representing the minority side?

Mr. HILLIS. Thank you, Mr. Chairman.

I just want to follow up on what you said about the subcommittee's concern with respect to the National Guard modernization program. In past years, the services have testified that they supported the total force concept but that they could not afford to modernize the Guard and Reserves in a constrained funding environment. In the past 2 years, however, things have changed dramatically. Defense procurement has increased by 87 percent, from $47.8 billion to $89.5 billion.

Mr. Chairman, this is the year we're going to find out whether the services are really serious about increasing the capabilities of the Guard and Reserve Forces. If there is nothing in the budget for them again this year, there won't be any valid excuses.

Mr. STRATTON. Thank you very much.

It is my understanding that the presentations will be classified. If that is correct, General, then we will have to go into executive session.

Pursuant to the authority granted to the Chair by a rollcall vote of the committee on March 4, we will now go into executive session. Our guests who are in the chamber will have to leave.

[Whereupon, at 2:10 p.m., the subcommittee proceeded in executive session.]

Mr. STRATTON. OK, General, you may proceed.

STATEMENT OF LT. GEN. JAMES H. MERRYMAN, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

General MERRYMAN. With your permission, I request my statement be put into the record.

Mr. STRATTON. Without objection.

General MERRYMAN. I would like to start, Mr. Chairman, by saying it is an honor to appear before you again in this subcommittee. Today we want to tell you about the Army aviation program. Specifically, we will talk about the people and equipment that make up the current program, what Army aviation contributes to our fighting capability, and tell you about our long-range plan for aviation.

Following me, Bridgadier General Parker, the Army's staff aviation officer, will address in detail our asset posture versus our requirement. Finally, three project managers: UH-60 (Black Hawk), the AHIP [Army helicopter improvement program], and CH-47 (Chinook) will brief you on their programs.

I show you this slide [deleted] to show you your calling the aviation hearing as the beginning of the hearings is most timely.

This slide [deleted] indicates over the past 10 years what the Soviets have been doing. What it really tells us is that our interest in helicopters, needless to say, is shared by them. I thought you would want to see this.

Mr. STRATTON. It wasn't too long ago I remember people used to say that the Soviets were ahead of us in everything except aircraft carriers and helicopters. Apparently they have now surpassed us.

General MERRYMAN. Last year, for example, I showed you a chart that we were slightly ahead. If I showed you one today it

would be a tie. Nine years ago when I first appeared before this subcommittee, when I had General Parker's job, I told you about an organization that we were learning about in East Germany, that was supposed to be equipped with a thing called the Hind helicopter. That particular helicopter, which is a most capable attack helicopter, is now being produced by the Soviets at a rate of [deleted] a month, and they have [deleted] in their ground forces. They have produced nearly [deleted] which they have sent out to all of the Warsaw Pact and other Soviet forces.

Mr. STRATTON. That is the one that is operating as a gunship in Afghanistan?

General MERRYMAN. That is correct. They have additional gunships to the Hind. But the Hind is the most capable one.

General Parker will show you some pictures, sir, so I won't go any further in that area. If you are ready, we are ready.

Mr. STRATTON. Sure.

WRITTEN STATEMENT OF LT. GEN. JAMES H. MERRYMAN

Mr. Chairman, members of the subcommittee, I am Lt. Gen. James H. Merryman, the Deputy Chief of Staff for Research, Development, and Acquisition for the Department of the Army. It is an honor to appear once again before this committee. Today, we want to tell you about the Army aviation program. Specifically, we will talk about the people and equipment that make up the current program, what Army Aviation contributes to our fighting capability, and tell you about our long range plan for aviation. Following me, Brig. Gen. Parker, the Army's Staff Aviation Officer, will address in detail our asset posture versus our requirements. Finally, three project managers: UH-60 (Black Hawk), the AHIP (Army Helicopter Improvement program), and CH-47 (Chinook) will brief you on their programs.

Today, we will present to you an aircraft procurement request for $2.7 billion. Within this funding level, we have tried to meld a balanced investment in near term readiness, modernization, sustainability, and mobilization capability.

The international turbulence that has marked the last three years has underscored the need for the Army to be, and be perceived to be, ready to succeed in a wide range of missions. We must be equipped to meet our defense commitment in Central Europe, without sacrificing the flexibility needed to meet threats to vital U.S. interest in other parts of the world. Soviet modernization in all classes of equipment in well known to each of us. Further, the infusion of modern military equipment around the world has changed the very nature of indigenous forces. Whether we face the Soviet Union or a surrogate, we are almost certain to face a well armed, sophisticated enemy. Our broad commitments pose a complex and awesome problem for the Nation and, in turn, the Army. We must be able to rapidly react and complete our mission, 24 hours a day, over a great variety of geographic and climatic conditions. Much of the current Army aviation inventory will not adequately perform in many areas where our Forces may have to operate. To correct this shortcoming, we need to procure modern attack and lift helicopters that have been made possible as a result of our successful research and development programs of the 70's. These systems, such as the AH-64 and the UH-60 provide a quantum improvement in performance over older systems and provide us with the capability needed should we be called on to defend our Nation's interest worldwide. As you are aware, there is a special hearing on the AH-64 tomorrow, but I must emphasize here the need for this aircraft and the Army's belief that we must proceed with the program. The Apache provides the Army a mobile, credible antitank capability that can be quickly deployed worldwide to areas of key strategic concern well in advance of heavier antitank systems. Apache's ability to operate worldwide, in conditions that make the Cobra ineffective, may be the difference between success or failure until more conventional, heavier Forces can be deployed to meet Soviet armor. The powerful, two engine Apache has been designed from the start to perform anywhere in the world under the most demanding conditions of altitude and climate. Its speed and agility enable pilots to take advantage of the terrain, vegetation, and even buildings to avoid detection. A target acquisition/designation sight and pilot night vision sensor enable the pilot to navigate and attack in adverse weather conditions, darkness and on an obscured battlefield.

The Army's requirements for aviation is based upon our Force structure which is driven by the Soviet threat. I know that you have been briefed at length on the threat, so I will not give you a lot of detail; however, I would like to make a few pertinent comments. Since last year when I told you the Soviet Union outspent the U.S. by an estimated $240 billion in the production of military equipment in the 70's, their modernization has continued to encompass all classes of equipment including aviation. Today, the Soviets are producing their primary attack or close support combat helicopters, the Hind at [deleted] and have produced a total of [deleted]. Approximately [deleted] are in the Soviet inventory and the remainder have been exported to some [deleted] countries. The Hip, a multipurpose helicopter which can be heavily armed, is being produced at [deleted] per month. About [deleted] Hips are used to support Soviet ground forces and others have been exported to some [deleted] countries. Poland is producing the Soviet designed light utility helicopter, the Hoplite at a rate of [deleted]. On the other hand we will produce an average of 4 AH-64s per month in fiscal year 1983, reaching a maximum of 12 per month in fiscal year 1986 for a total of 446 aircraft. Approximately 1,000 Cobras with a tank killing capability will also be a part of our attack helicopter fleet during the 80's. The UH-60 Black Hawk reached a maximum programed production rate of 8 per month in fiscal year 1982 and a total of 1,107 is planned.

The quantity problem is compounded as the Soviets exploit technology in an attempt to surpass us in quality as well. To correct the imbalance, we must equip our aviation units with modernized equipment. To do this, we will need adequate funding over the next several years to provide the systems in sufficient numbers for our Forces. We understand that to procure the quantities of equipment at the rates we need, will depend upon how well we manage the resources that are provided to us. There are economic, political, and technological factors which are beyond our control, but we can improve our management. Some of the things we are doing include investigating ways to better discipline our cost estimating process, our fiscal management process, and our program change procedures. These objectives are being pursued in management and cost discipline efforts which are underway throughout the Army. Among the most promising initiatives are:

Development of an Army-wide plan to upgrade the Army's cost estimating capability with emphasis on the identification and improvement of those areas where the data base is inadequate or the methodology poor.

Display of cost ranges due to inflation rate changes, and of uncertainty ranges in cost estimates.

Requirement of a comprehensive annual update of life cycle cost estimates for all major weapons systems and selected nonmajor systems.

Consistency in addressing inflation programmatically and in contracts, with particular attention given to the management of inflation by the contractor.

Tying the decisions made in the materiel acquisition process to the Army program and budget.

The materiel development and readiness command has the responsibility for executing most of our research, development, and acquisition program and is also taking action to improve control over acquisition programs by increasing the visibility of unfavorable variances or trends. An annual execution plan will be used as a common basis for management reviews, and a cost baseline will provide an unequivocal program cost track. Monthly status reports will be the basis of evaluations which will be the alarm system for variances in cost, schedules, and technical changes. This early information on potential cost growth is necessary so that we can identify the causes and make timely decisions on alternative courses of action.

During the fiscal year 1982 authorization and appropriations process you provided us with several tools which we believe will help us to improve our management efficiency. We especially appreciate your actions to:

Expand the authority for multiyear contracting and increase the cancellation ceiling.

Raise the ceiling under which the services secretaries may delegate approval authority for negotiation of contracts for experimental, development or research work.

Raise the reprogramming thresholds for both R. & D. and procurement programs.

By providing for program stability, multiyear procurement is an acquisition tool that can yield substantial dividends. While we are positive about multiyear, we recognize that it is not a cure-all. Therefore, we are proceeding cautiously and are evaluating each candidate on a case-by-case, benefit/risk basis. Later in today's briefing both the Black Hawk and CH-47 program manager will update you on their plans for multiyear contracting. We are also using a multiyear approach to the procurement of the ALQ-136 radar jammer, an important item of aircraft survivability equipment.

Your committee is an essential partner to our aviation modernization effort and with your continued support, we can provide our Army with the aviation capabilities it needs should it be called upon to defend the Nation's vital interests.

At this time, I would like to proceed with the briefing I have already outlined. I will be followed by Brig. Gen. Parker, the Department of the Army Staff Aviation Officer.

STATEMENT OF BRIG. GEN. ELLIS D. PARKER, DEPUTY DIRECTOR OF REQUIREMENTS, ARMY AVIATION OFFICER, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS, DEPARTMENT OF THE ARMY

General PARKER. Mr. Chairman, members, it is a pleasure to appear before you this afternoon and have the opportunity to explain Army aviation, its importance, its contribution as a member of the combined arms team. My presentation will be classified secret.

I would request my prepared transcript be entered in the record. I will briefly summarize the program, focusing on the threat from the standpoint of the threat—I am referring to the type aircraft that our adversary has, the quantities, the capabilities of them, and then I will talk to our fleet and try to focus on the shortfalls that we have now and those that will occur in the future.

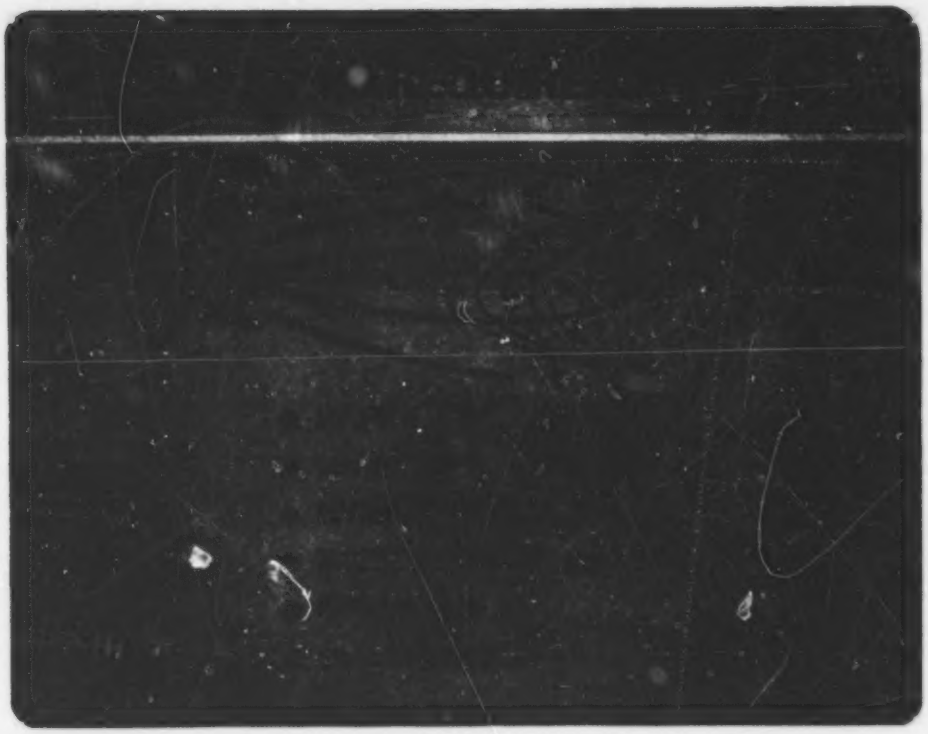
Mr. STRATTON. Without objection, your statement will be put in the record.

General PARKER. The overall mission of the Army, of course, is to conduct prompt and sustained operations anywhere, any time, on short notice. To accomplish this, it is imperative that the commander have intelligence information so he can learn as much as he can about the enemy, to prepare his battle plans, have the capability to move his forces, to move his supplies, ammunition, fuel, to sustain the battle. And, of course, that is a contribution that Army aviation makes, providing that lift capability.

Army aviation in Vietnam was a critical member of the battlefield, a combined arms team member. Today I will give a brief overview and cover the threat and types of aircraft and missions.

You see here a picture of the CH-47 Chinook. This photo was taken in Vietnam. It merely gives you an idea of the contribution this aircraft made. I think what Army aviation did for itself in Vietnam was proof of the utility on the battlefield, because as we review our principles of war, those principles which, if most of them are adhered to by the commander, insures our success on the battlefield. And we are talking about things such as the ability to mass firepower, the element of surprise, security, the ability to maneuver our forces.

I would go through all of those principles of war, and I think that I could show you very easily the part that aviation contributes to those principles of war. So I shall not go through each of them. But I think Army aviation did establish itself in Vietnam and it revolutionized command and control on the battlefield, enhancing the ability to mass fire, and to shift combat power.



Now, after Vietnam, we refocused our attention and obviously we had to take a look at the Warsaw Pact, their capabilities, their growing numbers of helicopters, their growing numbers of armored weapons. This dictated that we refocus some of our attention to an antiarmor capability. And I think you will see that flavor in the presentation as we talk about our requirements.

Although the primary threat is NATO, we still have to be prepared on short notice for other types of contingencies, where the armored threat might not be the predominant force on the battlefield, and we would still have the necessity to move light infantry.

ARMY TACTICAL AIRCRAFT INVENTORY AND LOCATION

Category	Conus					Europe	Pacific	Total
	Forscom	Tradoc	RC	Depot	Other commands			
Scout/LOH	746	63	982	90	38	352	137	2,408
Attack	427	51	34	145	91	216	70	1,034
SEMA:								
EH-1 Quick FIX	6							6
RU-21	7		11			7	7	32
OV-1	16	12	47	23	47	17	6	168
RM-1	6			(1)		6	6	(1)
Utility:								
UH-1	751	357	1,723	133	192	426	247	3,829
UH-60	191	13			6			210
Medium lift:								
CH-47	167	6	108	35	19	60	49	444
CH-54			72	1				73
Totals	2,317	502	2,977	(1)	393	1,084	522	(1)

1 [Deleted]

Sir, this next slide shows you our current inventory, minus the utility fixed wing aircraft. It breaks them out across the top by major command and geographical location. And down the left-hand side of course the type aircraft broken out by Scout, Attack, SEMA [special electronic mission aircraft], intelligence gatherers—the utility, and the medium lift. And of course we have the quantities for each of those depicted. I think the significant thing to note here is that approximately 20 percent of our resources are currently forward deployed in Europe, in the Pacific; roughly 30 percent are in FORSCOM units that would be the first to reinforce NATO, and then just over a third are in the Reserve components, the Guard, and the Reserve.

Now, the United States has traditionally—we think we are the pioneers, the Army does—in helicopter tactics, techniques, technology, research, development, and hardware. And we have enjoyed that reputation for a long time.

Mr. Chairman and members, I can tell you that we are being challenged in that arena at the present time. I hope to show that to you today.

THREAT UPDATE

Now, there have seen several articles recently in the Red Star. There is one that I would like to quote to you specifically because I think it talks to the antiarmor role on which we have placed great emphasis. And this is an article by Lieutenant General Rischenko. He was recently quoted in the Defense Industrial Review. I would like to quote him. He is talking about the attack helicopter, and the antiarmor role.

"They are superior to other antitank weapons in terms of fields of fire, vision, maneuverability, and firepower. They are capable of hitting armored targets while remaining out of reach of antiaircraft weapons. The correlation between tanks and helicopter losses is 12 to 1, or even 19 to 1 in the helicopters' favor, according to practical experience."

And with that, the next slide [deleted], I would like to talk about the helicopter that General Merryman mentioned to you a minute ago, the Hind, a very heavily armored helicopter. It can carry 64, 57-millimeter rockets. It can carry four AT-6 antitank weapons. And it carries a 12.7-millimeter Gatling gun, four barrel, in the nose, a tremendous amount of firepower. It is also interesting to note that they are doing some of the same things to that aircraft that we have done to our fleet from the standpoint of making them less vulnerable to the threat.

I am talking about the type of paint on them, the IR suppression gear. We find they are just a chapter or so behind us right now, and closing rapidly in the employment of those types of techniques.

For the next one here, this is a picture of the Hip-E. This is the most heavily armed antitank helicopter in the world. This particular weapons system can carry up to 192, 57-millimeter rockets. It can carry also four AT-6 antitank weapons. And of course it carries in the nose, which is not shown on this photo, a 12.7-millimetr single barrel weapons system.

Now this AT-6 is a second generation, if you will, antitank weapon. And this perhaps has been the first time that you have had exposure to that. This weapon system has a capability of engaging successfully a target at up to [deleted] kilometers, and it can travel that distance in approximately [deleted] seconds. And that is considerably faster than the capability of our own weapon.

The 57-millimeter rocket that it carries has a bursting radius equivalent to our 60-millimeter mortar, about 25 meter bursting radius, and of course it can penetrate armor.

Now, in any of these aircraft of course you can change the configuration, if you wanted to carry more of one type weapons system than the other. In fact, you even have the capability on the Hind of carrying bombs, up to 1,000 pounds each. You can carry two of those, or break it out into four, 500-pound bombs.

Mr. STRATTON. What does that compare with in our inventory?

General PARKER. Sir, this helicopter would compare most favorably to the AH-64, in between it and the Cobra. The technology is probably in between the two. The amount of weapons that it carries, the amount of ordnance it can deliver, is certainly comparable to the AH-64, the Advanced Attack Helicopter.

Mr. STRATTON. Does it have any carrying capacity?

General PARKER. Yes, sir; it does. In both of these aircraft that I have shown you, they can carry personnel inside the aircraft. This one can carry up to 24 combat equipped troops. The Hind, the first one, of course, can carry troops, but a lesser number.

Mr. STRATTON. This looks a little bit like the CH-54.

General PARKER. Yes, sir, somewhat.

Now, I think the interesting thing to note is the number of these systems that they have fielded. They have [deleted] attack regiments currently. In those regiments you find [deleted] Hind, and Hip helicopters. Then they have [deleted] transport regiments.

General MERRYMAN. These are big helicopters. For example, this thing, I don't have the weight on it here. You are talking 24,000, 25,000 pounds, compared to the Cobra, which is 10,000, and the AAH, which is 14,660 pounds, primary mission gross weight. So they are big; they are built over [deleted] of these.

General PARKER. [Deleted.] Now, all of those have not gone to military use. But the significant thing there is in full mobilization they have the capability of calling all of them to military use. Now, they have exported this Hip-E to 24 countries. The first one I showed you, the Hind, has been exported to 14 countries. Now, additionally, we know they are currently working on, and are in about the [deleted].

Sir, this slide [deleted] depicts the antiarmor helicopters, United States versus the U.S.S.R. You will note the red lines reflect the U.S.S.R. inventory, the blue lines of course the U.S. inventory.

Now, you notice that the Hip is down here very low. They have currently [deleted] of those in service. But not all of them are dedicated to the antiarmor role.

I have shown you here those that are antiarmor only. But it is significant to note they can very quickly and easily convert all of them to antiarmor should they have the necessity to do that. Of course, you see our AH-64 that we hope to bring on in 1984.

Mr. HUNTER. Excuse me. I thought you just said there were [deleted] of these Hip's?

General MERRYMAN. No, let me explain that. They have built over [deleted] Hips. The Hips come in several different varieties, E model, C model, D model. The particular model he showed you on the last slide is an E model, which is the heaviest armored version. It is a [deleted] number.

Mr. HUNTER. Right now they have something less than [deleted] antiarmor Hips.

General PARKER. Yes, sir; that is correct. The [deleted] plus that I mentioned to you is the total number of Hip's they have produced in the country. They have exported them to 24 countries. Not all [deleted] are in military use.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. STRATTON. The helicopters that were used in the Iranian rescue, is that the CH-53?

General PARKER. CH-53; that is the aircraft currently being produced for the Navy and Marine Corps, sir.

Mr. STRATTON. Isn't that more the size of the Soviet helicopter?

General PARKER. It is larger than the Hip, the one I showed you. It gets up close to the size of their MI-6, which is a very heavy lift helicopter. But it is used in heavy lift roles, not in the antiarmor or as a troop mover.

Mr. STRATTON. I see. Go ahead.

General PARKER. The Army aviation role in the land battle simply stated is to augment the resources of the combat commander, to enable him to conduct sustained combat. To accomplish this mission, it is absolutely essential that he have certain capabilities.

AIRCRAFT FUNCTIONS

Here are some of the functions that we are talking about:
Surveillance;
Reconnaissance;
Target acquisition;
Anti-Armor;
Liaison and Command/Control;
Vertical Envelopment;
Battlefield Resupply; and
Aerial Medical Evacuation.

CLOSE COMBAT HELICOPTERS

Now I would like to start into a brief overview of the type aircraft that we have, the principal ones that you have interest in, the ones that are in the budget, the ones that we think we need to make you aware of their profile, those that we are retiring, those we are improving, and those we are procuring.

First of all, the special electronic mission aircraft, then the Scout and the Attack.

Now, the commander, in order to execute that battle, must have the ability to gain intelligence. So we have a family of aircraft that I will briefy review with you this afternoon in the SEMA, special electronic mission area.

We will also talk about the Scout, and then we will talk about the Attack.

First is the Attack. This is our AH-1S Cobra. It is currently our principal attack helicopter. Now, we have 920 of those. We are converting these to the S model, the fully modified configuration. This is a prime example of an aircraft that we have product improved, not unlike what the Soviets have done with the Hind. They started out with an A model and grew that to an E model, several different versions each of which enhanced its capability. We have done the same thing with the Cobra. We have five different versions of modifications that we have performed on this aircraft to grow it to capability as today.

Mr. HUNTER. Mr. Chairman, could I ask another question?

What is the antiarmor capability of the Cobra now?

General PARKER. The antiarmor capability of the Cobra is the TOW missile right now. It can carry the TOW and the improved TOW, which has the capability of firing at armored targets out to 3,750 meters, and can penetrate, with the improved TOW, [deleted].

Mr. HUNTER. How does that stack up against the Hind, and how many TOW's can the Cobra carry?

General PARKER. We can carry eight TOW's. Of course you recall on the Hind you can carry 4 antitank missiles—an AT-6.

Mr. HUNTER. In your opinion, is the Cobra an effective antitank helicopter?

General PARKER. Yes, sir; it is effective. It is an effective antitank helicopter. It does not have the capability of the Hind in that it does not have the standoff range. It has to get in closer to the forward line of troops and thus be subjected to possible air defense capability of the enemy. So I would consider the standoff range of

the Hind and the HIP, with AT-6, to be a decided edge over the standoff range of the Cobra.

Mr. HUNTER. How much does the Cobra cost, approximately?

General PARKER. Approximately $4.7 million, as you see it there, sir.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. STRATTON. General, before you get back on this, you have shown us the Soviet helicopters. These represented the threat that we are faced with. Now, we are getting into our helicopters. Since you have outlined the threat, where do we stand in antihelicopter capability?

General PARKER. A very good question, sir.

Mr. STRATTON. The helicopter is not the best way to defend against another helicopter, is it?

General PARKER. Yes, sir; I believe that it is. It is an appropriate question. The article that I quoted from a moment ago in the Defense Industrial Review, the lastest issue, Lieutenant General Rischenko was quoted there as saying that like the tank, when it first came onto the battlefield, we soon found that the best defense against a tank and the best weapons system to engage it was another tank. General Rischenko was quoted as saying he believes the same is true for the helicopter, that the best defense against the attack helicopter is another attack helicopter.

Mr. STRATTON. But this thing is primarily designed against tanks, not against helicopters.

General PARKER. Yes, sir; and of course they face exactly the same thing with their aircraft now. We have been watching with great interest to see whether they were developing any air-to-air roles. We have seen no evidence here, but we certainly expect from some of their writings that they are. Of course we are currently conducting a study and a series of tests in that particular arena.

Mr. STRATTON. I don't want to interrupt your train of thought, because you are presenting these helicopters. But it seems to me that at some point we ought to be briefed on what the Army is doing against enemy helicopters. In fact, when we were in Afghanistan and talking—in Pakistan—when we were talking to the Afghanistanian rebels, the one thing that they feared most was the Hind Helicopter, and the thing that they wanted most was some kind of antihelicopter device. Some of the SA7's or 8's, whatever the Soviets had.

I think we need to know exactly what we are doing in that particular field.

General MERRYMAN. Mr. Chairman, let me add some light on that, sir. As I introduced myself to you last year as a senior aviator, you must know that my heart lies behind the wings. But I am now in charge of all R. & D. and procurement programs. So I know what you are getting at.

Are you familiar with the Divad gun?

Mr. STRATTON. Yes.

General MERRYMAN. I would say 90 percent of the reason behind that gun is what you have seen and listened to on the Soviet helicopter threat. It primarily drove our development of that gun. We will be coming to you and asking for procurement dollars for it in an air defense hearing later this week or next week.

In addition to DIVAD, we have a thing called the Stinger, our version of the shoulder fired missile. It is really through those two things and Chaparral missiles, it is really through those weapons that we hope to counter this threat-primarily.

What General Parker is talking about is—we are trying to keep our options open. There is only so much money to go around, sir, as you know. We would love to have an antihelicopter capability aboard our helicopters, but the money just has not been there. We may be driven to that some day. But for the time being, what we are relying on is what I just told you.

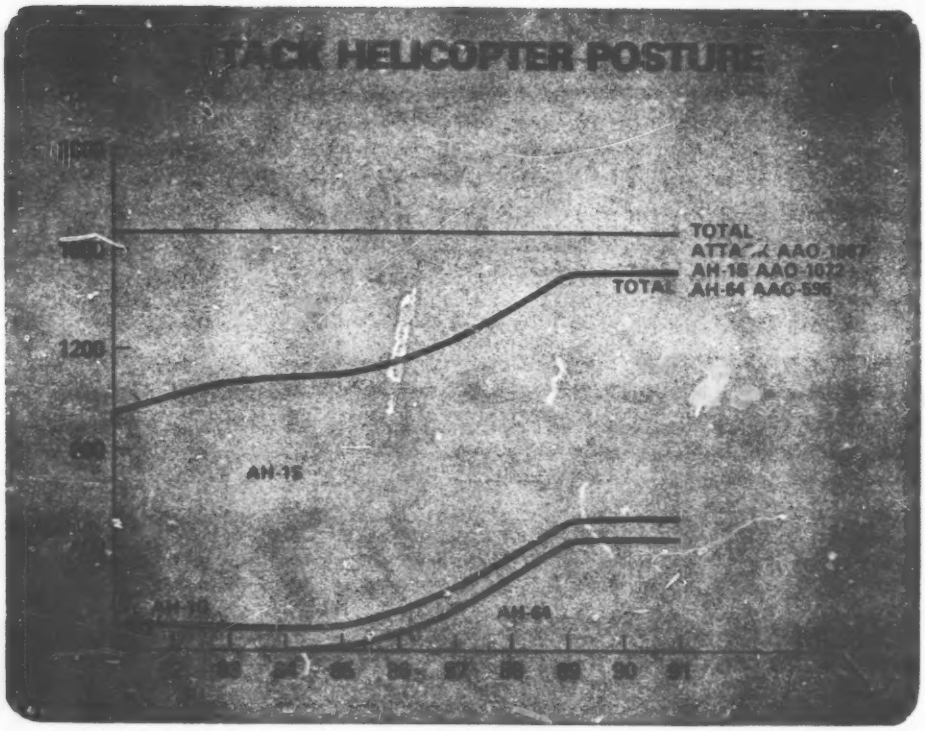
Mr. HILLIS. May I ask one question.

In the armament of the Hind and the Hip, you mentioned the gatling gun, the single gun. Is that a defensive weapon or do you envision it in an offensive role?

General PARKER. Designed and installed on the aircraft we believe in an offensive role, but certainly it has the capability of providing limited defensive capability, out to 1,000 or 1,500 meters in effective range.

Mr. HILLIS. Thank you.

General PARKER. Sir, in further response to your question, the air defense systems that General Merryman mentioned that we are developing, we know the Soviets are developing the same types of air defense systems to play against our helicopters, and there are writings to confirm that. So we are building aircraft survivability type equipment into our systems as well. We have the capability of determining that we are being tracked by radar. We have the ability to jam a radar, to jam an infrared seeker. And of course we have reason to believe that the Soviets are doing the same thing for their aircraft.



Now, this shows our attack helicopter posture, sir. The line at the top here, just above 1,600, the 1,667 is our Army acquisition objective (AAO). It is that number of aircraft that we would like to have to fill the force structure requirements that we have identified.

You will note that currently we are at 920 on the AH-1's. And we have a few G models here. Of course, we start to bring in the AH-64 at this particular point. And even out into the 1990 timeframe, after we have yielded the 446 AH-64's, you see that we are still not up to our Army Acquisition Objective.

Now, this number of aircraft compares as you recall to [deleted] Hind helicopters, [deleted] Hips that could all be converted to an antiarmor role, of which right now about [deleted] of them are in the antiarmor role.

Mr. KRAMER. Before in your description of the Soviet helicopter, you mentioned that it covers 2½ miles.

General PARKER. Yes, sir. The maximum effective range is 5,000 meters. It can cover that distance—AT-6 missile—covers that distance in [deleted] seconds.

Mr. KRAMER. In terms of maneuverability, how do you compare the higher profile, larger Soviet systems with our own Cobra and the AH-64? Do we have an advantage there?

General PARKER. Yes, sir; we do believe that the larger helicopter is more vulnerable in that it is easier to hit. Generally speaking, it will tend to be less maneuverable. We do have a difference, a minor difference in the tactics and techniques that are employed right now between us and the Soviets for the helicopter. The threat has pushed us to what we refer to as a nap-of-the-earth environment. I mean the helicopter is down among the trees, barely missing the tops of the trees. We find the Soviets have started to get [deleted].

We see them going [deleted]. That also plays the ability of the machine to lift in that nap-of-the-earth environment. The larger the helicopter, the harder it is to find a hover hole in between trees and obstacles. Of course, this is the picture of the AH-64 Apache. The first helicopter in the world designed to fight around the clock, and even in adverse weather conditions. This aircraft of course carries the 16 Hellfire missiles. And the Hellfire missile as you will recall has a capability of engaging targets out to [deleted] in the indirect fire mode. It does not have to see the target. The targets can be lased by Scout Helicopter, or a ground-held laser designator by an individual, and it would reach the [deleted]. It can be employed in the direct mode at [deleted].

On a recent demonstration I observed the aircraft with a young marine student receiving training on an M-48 tank hull at [deleted]. And this was a demonstration training mission combination. We had the Training and Doctrine Command commander from the Marine Corps out who had expressed interest in the aircraft.

As you are aware, the marines are interested in procuring up to as many as 120 AH-64's. And the system is so accurate and so easy to engage that we chose to let this young marine undergoing training fire that missile. And of course it was dead center.

Mr. STRATTON. General, I think we are going to have to move along. This helicopter is the big problem that we have to address ourselves. This has a large cost increase. We have to face up to that. So I think we are going to have to have you, General Merryman, or somebody, address this. I think we have to get into the details. I think what we want to do is to try to take each one of these aircraft and deal with the issues. Because what you tell us is going to determine whether we are going to fund them.

General PARKER. Let me move quickly through the others, sir.

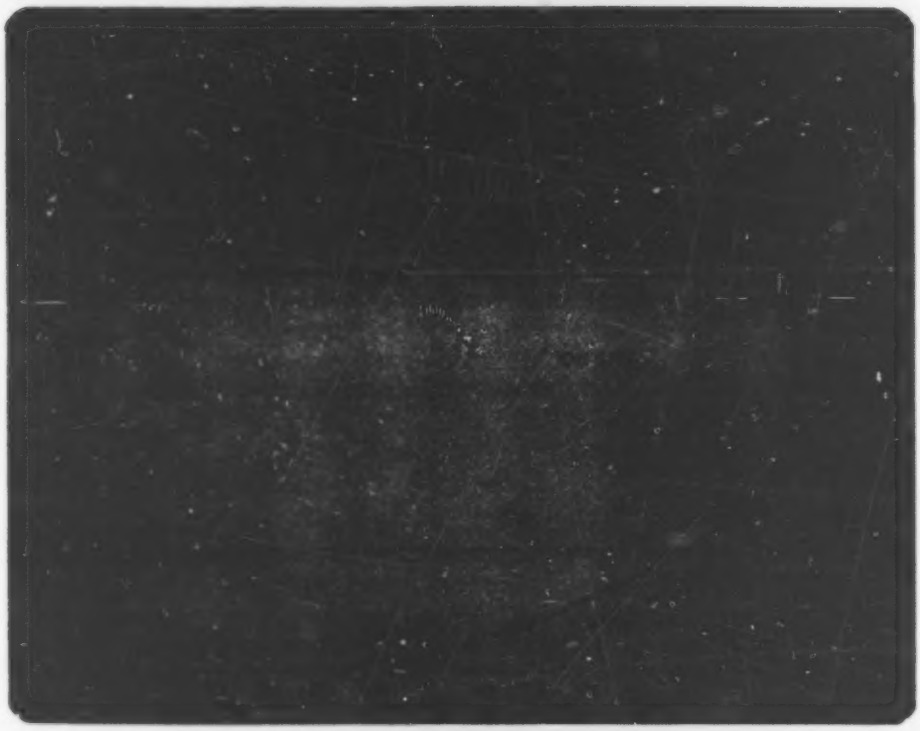
Mr. STRATTON. We have a very tough schedule here. We have to cover all of these systems in a very short time.

ARMY NEED FOR AAH

Numerical superiority and increased sophistication of threat armor;
Kill tanks day, night and adverse weather;
Increased lethality and rapid rate of fire;
Stand-off capability reduces losses;
Improved front line survivability; and
High speed, flexible antiarmor system.

General PARKER. This slide reflects the need for an advanced attack helicopter. We have talked to those already.

Here of course is our light observation helicopter systems, two aircraft—OH-6A and OH-58. They are observation aircraft. They are not designed to live in a nap-of-the-Earth environment as a Scout helicopter would.



Here is our Scout and light observation helicopter posture. The top line up here shows of course our requirement 2,399. It is a mixture of the OH-6 and OH-58. Of course you see we plan on bringing the AHIP in at this point in time, in 1985. I will not go into detail on that. We do have the project manager here.

Of course here are the needs for the Scout helicopter.

ARMY NEED FOR A SCOUT HELICOPTER

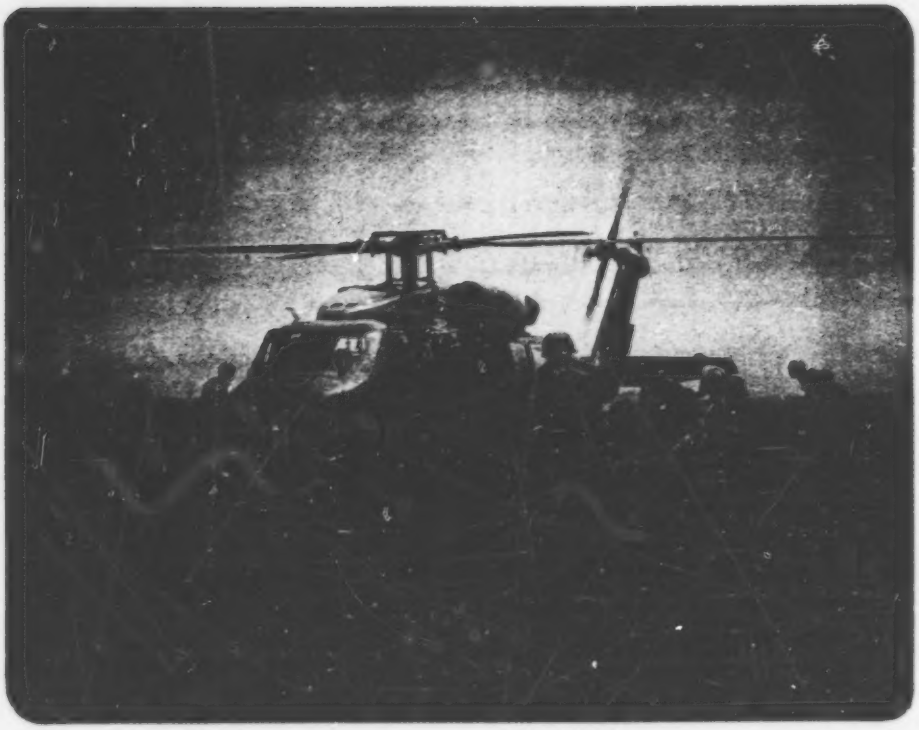
Requirement: Intelligence gathering, reconnaissance, target acquisition, antiarmor operations, antiair defense operations, battle management, and economy of force.

Typical tasks: Surveillance, aerial observation of land routes, scout for attack helicopters, adjust artillery fires, laser designate hellfire missiles, locate and designate enemy and weapons, command and control, and gap surveillance.

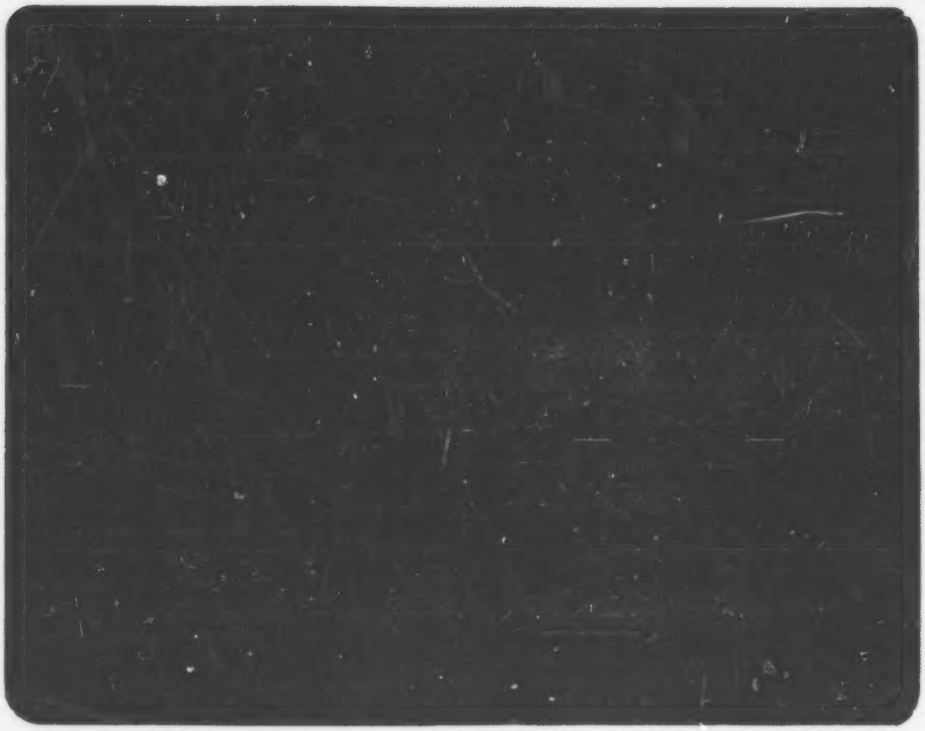
The OV-1 Mohawk. We currently have 126 of those aircraft in the system. We are using 87 of them actively. The others are mothballed at this time. We are product improving this to give it the capability of a quick look system that could pick up, detect enemy radars. It also has the ability to detect moving targets. It has infrared capability in its side looking airborne radar. We are modifying the older B's and C's to a D model configuration that packages multiple sensors in one airplane.

Quick Fix air asset. This is a picture of the Black Hawk configured as a Quick Fix. It has the capability of finding electronic emitters and jamming them.

Of course here is the UH-1 that has been with us for some time and will continue to be in our force structure for a long period of time. We will have product improvements to make on that as we progress.

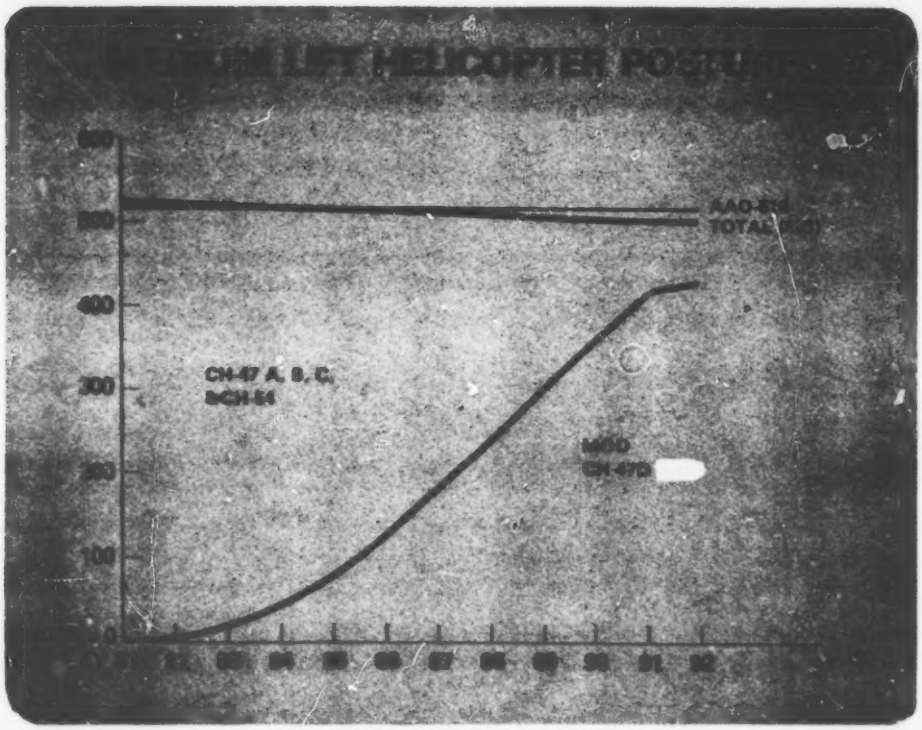


Here is our utility Black Hawk, UH-60. Of course we have the project manager here. We will talk about that more.



The utility helicopter posture is reflected on this chart, sir. Up at the top you will notice the Army acquisition objective, a combination of UN-60 entering the inventory at this point, and of course the older UH-1's that are reaching their life expectancy, starting to draw down. Here we are bringing in the UH-60 medium lift helicopter.

We also have the project manager here. I will not go into any detail, other than to tell you it is our key mover of heavy cargo around the battlefield. It is that weapons system that would enable the commander if his intelligence had not been good or if the enemy had surprised him, to quickly shift combat power, not just troops but artillery pieces and all those things that make up the synergistic effect of a combined arms team.



The medium lift helicopter posture is reflected on this chart. It is laid out the same as the others.

Mr. STRATTON. You say the medium lift helicopter is used to lift heavy cargo. What does the heavy lift helicopter lift?

General PARKER. Sir, this is our medium lift. We do not have a heavy lift helicopter at this time. This lifts the heaviest cargo.

Mr. STRATTON. What is the dividing line between medium and heavy?

General PARKER. This particular aircraft in the newest D model configuration will lift up to 25,000 pounds under ideal conditions. That classifies it by our standards as a medium lift helicopter. We would have to get up in the neighborhood of 20 tons before we would consider it a heavy lift helicopter.

The CH-53E lifts a little more than this aircraft. I don't have the exact number. We could provide that for you, sir. It does exceed the D Model capability, but not by a substantial amount.

General MERRYMAN. Mr. Chairman, if you go back 10 years, the Navy was developing the CH-53E model and the Army was developing what they called the HLH, Heavy Lift Helicopter. The Army, in 1975, dropped out of that program. Right now the only thing that the Army's doing in the "heavy lift" arena is running some R. & D. to try to learn how to make gears that will hold up under all that weight, in case, in the future, we ever develop one of those big helicopters.

General PARKER. We have a technology demonstrator. But it is nothing more than that at this particular point in time.

This has been a very fast overview. I hope that I have impressed upon you the fact that the Soviets are closing the gap very rapidly, tactics, doctrine, techniques, and hardware in particular.

I hope I have been able to show you here as our fleet is aging we have to either product improve or procure new. And I think that

you noted from the graphs that I showed you that we are not over the Army acquisition objective in any system. In fact, we are under in most cases. With the growing armor threat we must continue to press in the antiarmor role.

Sir, I will be followed by Colonel Andreson, Project Manager for Black Hawk.

BRIEFING BY COL. RONALD K. ANDRESON, PROJECT MANAGER, UH-60A (BLACK HAWK), U.S. ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND, ST. LOUIS, MO.

BLACK HAWK PROGRAM (UH-60A)

Colonel ANDRESON. Good afternoon, sir.

Sir, I will provide a status briefing on the program together with a summation of where we stand on multiyear as well as the submission of the fiscal year 1983 budget.

This is an outline of my presentation, sir.

UH-60A BLACK HAWK PROGRAM

H-60 PROGRAM

AIRCRAFT QUANTITY

FY	BLACK HAWK	USAF	QUICK FIX	TOTAL
77	15			15
78	56			56
79	92			92
80	94			94
81	80	5		85
82	96	6		102
83	96			96
84	84		12	96
85	78		18	96
86	78		18	96
87	78		18	96
88	85		11	96
89	96			96
90	79			96
TOTAL	1,107	11	77	1195

This is an overview, sir, of the UH-60 program, to include the Black Hawk procurement, the Air Force procurement of 11 aircraft in 1981 and 1982, together with the quick-fix procurement when it comes on board in 1984.

The area within the rectangle is the proposed multiyear procurement of 288 airframes in the fiscal year 1983 to 1985 time period. We would only propose this if we were not approved to execute a fiscal year 1982 to 1984 procurement of 294 airframes.

Our program is 96 a year through buyouts.

UH-60A BLACK HAWK PROGRAM

PERFORMANCE COMPARISON

AT 4000' 95° WITH 3 CREW, MISSION FUEL

	BLACK HAWK	UH-1H
CRUISE SPEED	145 KTAS	105 KTAS
VERTICAL CLIMB (95% IRP)	624 FPM/11 TROOPS	0 FPM 0 TROOPS
ENDURANCE	2.3 HRS	2.1 HRS
SINGLE ENGINE	109 KTAS/11 TROOPS	AUTOROTATION
EMPTY WEIGHT	10,624 LBS	5,200 LBS
DESIGN GROSS WEIGHT	16,260 LBS	6,600 LBS
MAX GROSS WT	20,250 LBS	9,500 LBS

I would like to highlight very briefly, sir, to differences in performance between the Black Hawk and its predecessor UH-1H at 4,000 feet, and 95°, with a crew of three.

The key thing the Black Hawk can do is carry its entire payload with substantial power margin at 95 percent intermediate rated power, which is our normal baseline to allow for an eventual 5 percent power degradation.

UH-60A BLACK HAWK PROGRAM

PERFORMANCE REQUIREMENTS

	REQUIREMENT	CURRENT
• PAYLOAD (TROOPS)	11	11
• MISSION RELIABILITY	.987	.976
• CRASHWORTHINESS (G)	20	20
• VERTICAL CLIMB (FPM AT 4000', 95°F)	450	624
• CRUISE SPEED (KTS)	145	145
• ENDURANCE (HRS)	2.3	2.3
• SYSTEM MTBF (HRS)	4.0	4.9
• MAINTENANCE MAN-HOURS PER FLIGHT HOUR	3.8	1.6

These are the principal requirements that the Black Hawk was designed to meet. And with one exception all of these requirements have been met.

Mr. BENNETT. What is the exception?

Colonel ANDRESON. Mission reliability, 0.976 versus our requirement of 0.987. What we are talking about there is the probability of completing a 1-hour mission without an abort. What that 0.987 says, if you ran 1,000 1-hour missions you should only have to abort them 13 times for material failure. Currently we have about 24 aborts during 1,000 1-hour missions.

I would also like to point out the crash worthiness that was designed into this system. Within the past year, sir, at Fort Bragg, N.C., we had a Black Hawk crash which resulted in an excess of 50 G's. The Black Hawk is about a 60-foot long airplane. The total ground roll was about 40 feet. None of the crew members was severely injured, and today all have recovered.

We meet or exceed all other primary performance requirements. And this, of course, sir, is reported in the SAR.

Mr. STRATTON. Your Black Hawk is primarily a troop carrier, is that right?

Colonel ANDRESON. Yes, sir.

Mr. STRATTON. To replace the UH-1?

Colonel ANDRESON. Yes, sir, it replaces them on a 15 for 23 basis in the combat support aviation companies, and 7 for 8 in the air cavalry squadrons, and 1 for 1 in medical evacuation units.

UH-60A BLACK HAWK PROGRAM PRODUCTION DELIVERIES AS OF FEBRUARY 28, 1982

Deliveries	On contract	delivered
Lot I (fiscal year 1977)	15	15
Lot II (fiscal year 1978)	56	56
Lot III (fiscal year 1979)	92	92
Lot IV (fiscal year 1980)	94	85
Lot V (fiscal year 1981)	85	
Total	342	248

Current delivery rate 10 per month
Delivery status 15 ahead of schedule

This is the status of delivery. As of February 28, we had accepted delivery of 248 aircraft. Over the past 12 months we have accepted delivery of 128 Black Hawks, or just under an average of 11 per month. Our current delivery rate average is 10 a month, and we are 15 aircraft ahead of contract schedule.

Mr. HILLIS. Are these all going to the Active Forces, or are any of these going to the Reserve?

Colonel ANDRESON. Sir, these have all been delivered to the Active Forces. We have four programed for delivery to the U.S. Army Reserves and four to the National Guard, primarily as maintenance trainers.

UH-60A Black Hawk program deployment status as of February 28, 1982

Deployed:	
101st Airborne Division (Air Assault)	124
82d Airborne Division	55
9th Infantry Division	14
24th Mechanized Division	15
121st Combat Support Aviation Company	15
Training base/other	25
Total	248

U.S. Army Europe deployment: [Deleted.]
Flying hours: 85,000.

This is the disposition, sir——

Mr. WHITE. Those eight aircraft in the 1983 budget go to the Guard and Reserve?

Colonel ANDRESON. The four aircraft for the National Guard are from the fiscal year 1981 procurement and the four for the Reserve are from the fiscal year 1982 buy. They will be delivered in November of 1982 and May of 1983, respectively.

Mr. BENNETT. Why does the 101st have 124 and the 82d have 55?

Colonel ANDRESON. Because of their table of organization. The 101st is an airmobile division, authorized 6 combat aviation support companies with 15 each. They are an air mobile division. The 82d is an airborne division. There are different tables of equipment. The 101st has more aircraft by far than any other division in the active force.

Mrs. HOLT. Mr. Chairman, according to House Armed Services rule 8(b) I move the chairman be authorized to go into executive session for one subsequent day of hearings for the purpose of receiving national security information.

Mr. STRATTON. The Clerk will call the roll.

Mr. WHITE. Mr. Stratton.
Mr. STRATTON. Aye
Mr. WHITE. Mrs. Holt.
Mrs. HOLT. Aye.
Mr. WHITE. Mrs. Byron.
Mrs. BYRON. Aye.
Mr. WHITE. Mr. Hillis.
Mr. HILLIS. Aye.
Mr. WHITE. Mr. Mavroules.
Mr. MAVROULES. Aye
Mr. WHITE. Mr. Badham.
Mr. BADHAM. Aye.
Mr. WHITE. Mr. Leath.
[No response.]
Mr. WHITE. Mr. Courter.
[No response.]
Mr. WHITE. Mr. McCurdy.
[No response.]
Mr. WHITE. Mr. Kramer.
Mr. KRAMER. Aye.
Mr. WHITE. Mr. Hertel.
[No response.]
Mr. WHITE. Mr. Hunter.
[No response.]
Mr. WHITE. Mr. Price.
[No response.]
Mr. WHITE. Mr. Bennett.
Mr. BENNETT. Aye.

Mr. WHITE. Mr. Chairman, on that vote there are eight ayes and no nays.

Mr. STRATTON. The motion is agreed to. The Chair will have the authority for an executive session, if required.

Colonel ANDRESON. During the preceding year, since the fiscal year 1982 hearings, we have actually delivered to each of these locations shown. As indicated, we currently have fielded 11 full combat support aviation companies, 2 air-cav squadrons, and are now delivering our first air ambulance unit to the 326 Medical Battalion at the 101st Airborne Divison Air Assault.

The 121st combat support aviation company is currently assigned to Fort Benning, Ga. [Deleted] they will be deployed to USAREUR as the first fullup Black Hawk lift unit to Germany. In November of last year, the commanding general of U.S. Army Europe convened a decision review to determine whether Black Hawk was in a posture to be fielded on schedule [deleted].

In fact, Thursday of next week the first two Black Hawks will be arriving at Ramstein, aboard a C-141. Those UH-60A aircraft will be used for refresher training for the instructor pilots already in USAREUW and will precede the delivery of production Black Hawks.

When we finish the initial fielding of U.S. Army Europe, they will have [deleted]. Besides these 15, they will have 5 other combat support aviation companies, and an aeromedical company.

Sir, our flying hours are currently 85,000. During 1981, the Black Hawk was the workhorse of the Army's helicopter inventory. It

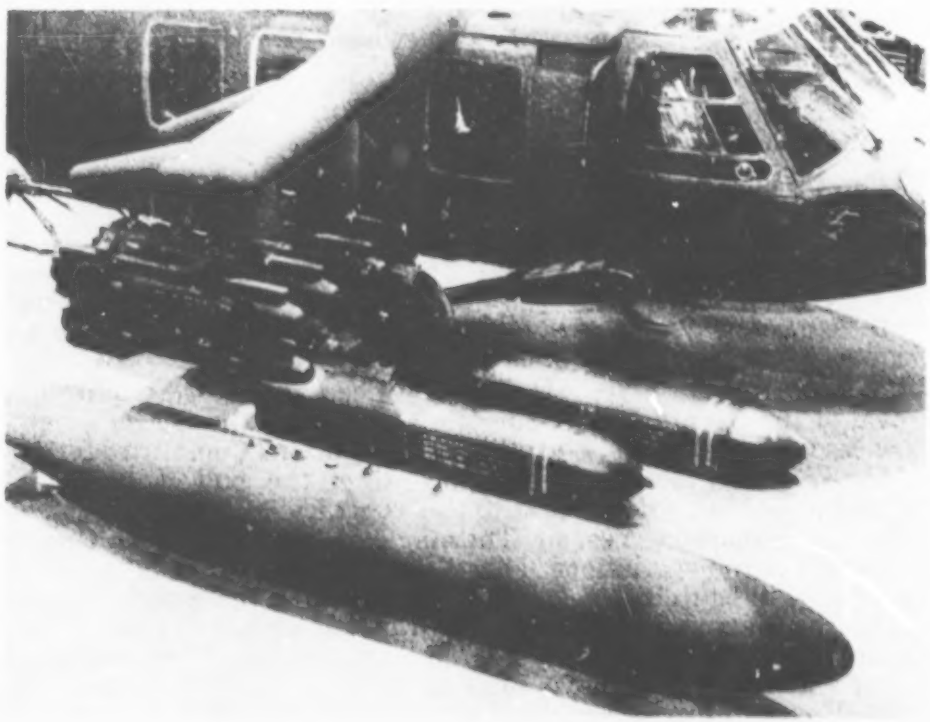
flew significantly more hours per month, per aircraft, than any other helicopter.

UH-60A BLACK HAWK PROGRAM OPERATIONAL HIGHLIGHTS—1981

Name	Location	Deployment mode	UH-60A Involved	Date
Bold Eagle	Fort Bliss, Tex	Self-deploy	15	Feb.
Ocean Venture I	Puerto Rico	Self-deploy	4	Apr.
Gobi Rendezvous	Fort Bliss	Self-deploy	11	June
Ocean Venture II	Puerto Rico	C-5/SELF (3)	18	Aug.
Bright Star II	Egypt	C-5	15	Nov.

We highlight here, sir, some of the tactical and strategic deployments that utilized Black Hawk during 1981. The one I would like to isolate on is the Bright Star exercise which this year was conducted by elements of the 82d Airborne Division. Bright Star 1 had elements of the 101st Airborne Division air assault.

During the conduct of the exercise, in that dusty, sandy environment, the 15 Black Hawks flew over 300 hours, more than any other group of helicopters, and maintained the highest operational availability rate, in excess of 97 percent.



Sir, at the initiative of this committee in 1980, the Army was directed to conduct a feasibility demonstration of the Hellfire on the Black Hawk. We are about to do that demonstration within the

next 2 months. However, we have expanded the scope of the program based on subsequent Army requirements to design, develop, qualify, and produce a multipurpose external stores support system, and together fully qualify the external fuel tanks which consist of the 230-gallon tank you see here, that will be mounted on an outboard pylon, and a 450-gallon tank mounted on each of the inboard pylons.

You see here the 16 Hellfire missile configuration, and 2 M-56 mine dispensers. The mine dispensers, if carried through to qualification and production, would be used in Europe to supplement the mine dispense mission which that theater has.

Again, to highlight the program, we are currently qualifying the fuel system and the external store itself, that is the wing structure, and we will do a feasibility demonstration by firing three Hellfires, one from the platform, one from a hover, and one from a forward flight, and also demonstrate the mine dispense mission.

Our current plan, sir, is to begin installation of the fixed provisions, that is hard points, just to the rear of the cargo department, on all Black Hawks, through its retrofit of the first 400 and a subsequent in-line production installation of the 700. And then purchase 400 sets of removable equipment.

UH-60A Black Hawk Program Contracts Status

AIRFRAME

Lot VI (FY 82) single year contract—negotiated.
Lot VI-VIII (FY 82-84) multiyear contract—negotiated.

ENGINE

Lot VI (FY 82) single year contract—negotiations in process.

The status of our contracts, sir. We have a negotiated Lot 6, fiscal year 1982, single year contract with Sikorsky. We also have a negotiated lot 6 through 8 multiyear contract. The amount of the single-year contract is just under $350 million. The multiyear contract for 294 systems is at $950 million. These are firm fixed price.

Mr. Stratton. We have to approve the multiyear contract, do we not?

Colonel Andreson. Yes, sir. Before we can award, we require approval of the Senate Armed Services Committee, the House Armed Services Committee, and both the Appropriations Committees.

Mr. Stratton. Part of our approval of the budget would be making a decision with respect to this contract.

Colonel Andreson. Yes, sir. The single year contract with General Electric is in negotiations. This is also a firm-fixed price. I anticipate that will be finally negotiated by the end of the month.

General Merryman. Mr. Chairman, what we are saying is that we are going to ask you for a 1982 reprograming. The confusing part about this is we have some dollars in the 1983 budget for Black Hawk multiyear in the event we are turned down for that 1982 reprograming.

Mr. Stratton. Let me ask this question, because this relates to the point. If I understand your testimony, if Congress approves the multiyear procurement in 1982 for the Black Hawk, we can save $147.3 million in fiscal year 1983, with no additional budget author-

ity required by the Department of Defense in fiscal year 1982; is that correct?

Colonel ANDRESON. That is correct. There would also be a $7.9 million savings from the Quick Fix advance procurement line associated with the fiscal year 1982-84 Black Hawk multiyear procurement.

Mr. STRATTON. Is there a deadline for the exercise of this option?

Colonel ANDRESON. Sir, there is no hard and fast deadline. There are implications, however, with regard to the air frame contractor. He has firm cost quotes, particularly for lot 8, which is the third year, for the materials buy, that if the multiyear were disapproved subsequent to March 31 of this year, he would be liable for cancellation charges. Now, that infers, sir, that if the 1982 multiyear option was disapproved subsequent to March 31, we could obviously be back into the single year contract, and that would have to be probably reopened for negotiations with a probable increase to the negotiated price as of the current time.

Mr. STRATTON. And Mr. Daniel says the reason this multiyear contract would require the approval of this committee is by virtue of the fact that it involves a reprograming from 1982.

Colonel ANDRESON. Yes, sir. Within the Army accounts, sir.

Mr. STRATTON. But that other multiyear contracts do not need the approval of the committee in order to go into effect. Is that the way you understand it?

General MERRYMAN. It wouldn't normally be the case, Mr. Chairman. It would not normally require authorization.

Mr. STRATTON. I am just trying to recall what we had in the original legislation.

General MERRYMAN. What happened here, Mr. Chairman, we originally asked for multiyear in fiscal year 1982, and we didn't get it. This is our latest attempt to try to get a 1982 multiyear. What we are doing this time, as you know, is just asking for the reprograming authority.

Mrs. HOLT. Mr. Chairman, where is the reprograming funding coming from?

Colonel ANDRESON. It will be coming out of four ammunition accounts within the Army. I can give those to you.

The total is $34.9 million; $5 million from the nuclear weapons support material account; $13.5 million from the 105-millimeter cartridge, APFSDS-T account; $9 million from the 25-millimeter cartridge TP-T account; and the final $7.4 million from the 25-millimeter cartridge APDS-T account.

General MERRYMAN. We were directed to take it out of the ammo accounts. What Colonel Andreson just read to you were four lines that were selected based on where we could more easily give it up.

Mr. STRATTON. The authorizing committees approved the fiscal 1982 supplemental request of $126 million to begin multiyear procurement of the UH-60A. The Appropriations Act provided no funds but it approved the concept, subject to later approval of the Armed Services and the Appropriations Committees.

During the appropriations bill debate, the Army argued that no funds would be required in fiscal 1982. But now, you indicate that $95 million will be required to fund full termination liability, al-

though the contractor says the money is not needed. Could you explain why the $95 million is needed for termination liability and what we get for it.

Colonel ANDRESON. Yes, sir.

At one point in time, the contractor, Sikorsky Aircraft, was willing to accept the risk associated with unfunded termination liability provided, of course, that the cancellation ceiling provisions were there and would be effective should a termination occur. However, it is the current policy of the Department of Defense to fund all known termination liability, and hence, our current submission includes a request for $95 million in the advance funding column, $67.8 million of which is for the lot 7 buy, $27.1 million of which is for the lot 8 buy, to allow the contractor to effectively and efficiently initiate his procurements, to take advantage of economic order quantitites, and larger lots, and where possible, in some parts, just buy a flat 300 each—to avoid inflation.

Now, the money, the $95 million, is a part of the basic negotiated firm fixed price of each of those programs. If I were to spend $100 million advance procurement on the lot 8 program, then the negotiated value of that lot 8 program would be reduced; by that $100 million in the fiscal year that it became fully funded.

Mr. STRATTON. What happens to the $95 million in budget authority? If the contract is not terminated, does that authorization ever get obligated?

Colonel ANDRESON. Yes, sir, it does. The $95 million will be obligated in 1982. It may or may not be expanded in that year. But the contractor will incur that much liability by September 1982. If the program were to be canceled, that is the 2 outyears, 1983, and 1984 portions were to be canceled sometime in 1982, that $95 million would go to pay the termination liability expenses.

In other words, we have funded under this concept the Government's liability. I would like to remind you that the fiscal year 1982 portion of 102 aircraft is fully funded.

Mr. STRATTON. This brings up the issue of unobligated balances that Mr. Addabbo is always raising, and I have heard others raise lately in connection with the possible cuts in the defense budget because of the deficits.

Colonel ANDRESON. The money will be consumed during the execution of the contract. What you are seeing in this particular procurement is more advanced funding, but no more funding—the $95 million, if it is broken out by fiscal year, is really a part of the 1983 and the 1984 buys that were negotiated as a firm fixed price.

Specifically, sir, in the 1983 buy, we negotiated for 96 Black Hawks at $313 million. That is the second year of the multiyear. As I indicated earlier, we are putting up $67.9 million of that money in 1982 so that he can effectively execute the multiyear and avoid inflation in both economic ordered quantities, and realize some production efficiencies.

So what we actually have in 1983 is not $313 million, it is $313 million minus $67.9 million. The same applies to the fiscal year 1984 portion, sir.

Mr. STRATTON. Well, the $95 million that you are going to obligate in 1982 for termination liability, when does that liability disappear?

Colonel ANDRESON. The 1982 liability would disappear on September 30, 1982. We would then fully fund the 1983 year. We would still have some liability funding in 1983 for the 1984 year. That amount is, as I will show you, sir, $68.9 million, and that is the second increment of long lead funding. That is the 1983 for the 1984 buy. That liability would disappear on September 30, 1983, when we fully fund the remaining portion of the contract.

On September 1, you take the $95 million in terminatin liability, and since you have not termina ed the contract, use it to make the final payment for the 1982 cost. is that right?

Colonel ANDRESON. Yes, sir.

Mr. STRATTON. I see.

Mr. MCCURDY. Mr. Chairman, I would like to make a comment on the record that Colonel Andreson is a remarkable program manager. He inherited a number of problems. I think he has done a tremendous job of trying to resolve these. I am not sure they are all resolved, but I think he has made a valiant effort, and has done a very good job in bringing this under better control.

During our panel investigation, we saw the cost in this program since 1971 increased to $7.24 billion. This represents a $5.3 billion or a 275-percent cost growth in the Black Hawk program.

Black Hawk has a poor history of cost growth, a terrible history, but I think the record is fairly clear now that many of the development problems and procurement problems have been resolved. The problem is we learned this too late, which comes back to the whole issue in this subcommittee, and the actions of the Congress—which is, by the time it gets to us, through the development stages, it is a foregone conclusion that we are probably going to approve it. Unfortunately, we are stuck with the poor track record and the billions of dollars that we cannot say are wasted, but were not used efficiently.

Colonel Andreson, do you feel that the problems that you have experienced in the Black Hawk program are now sufficiently behind you, and that you would not recommend it for multiyear unless you felt that, producing these at a rate which is economical will justify the costs that we have had?

Colonel Andreson, Sir, unequivocably. I feel that the program is ready to enter multiyear, that it meets all of the criteria established in the public law and by the Deputy Secretary of Defense initiatives.

I feel strongly that the new management team at Sikorsky Aircraft has done a remarkable job in the last 15 months. They have turned that around. It is indicative obviously in the production rate, 3 of the last 4 months they have produced at 12 a month, and we have agreed to accept 10 a month for calendar year 1982, one, to introduce the Black Hawk's capability in the field earlier, and second, to reduce the costs of our procurement. The more airplanes we buy earlier, means you come into a year where labor is a little cheaper and the more airplanes you build that year, you get a better break on the overhead.

I do feel that the program is ready to go forward with a multiyear procurement.

Mr. McCURDY. Colonel, I am going to ask you a somewhat unfair question, but you know, in dealing with me before, that is not unusual.

If you had been program manager back in 1975 and 1976, and you had started to witness the tremendous cost growth that was experienced at that time, do you believe you would have had a different approach with this committee in recommending the continued production or devleopment of the system?

Colonel ANDPESON. I would have had a different approach, sir, in all honesty. There are several causes for those production startup problems, not the least of which was the introduction of the weight incentive clause into the initial production contract. At that time, most cost estimates on the fixed price incentive contracts were based upon budgeting to the target price.

I think in retrospect, certainly that was an error. The cost growth has always been related to the budget and not necessarily the limit of the obligation of the Government to pay under a fixed price incentive contract.

I also, in retrospect, would, while it seemed like a great idea at the time, not necessarily have gone to what was called really a kind of 4 year procurement. Single year fully funded with 3 priced option years for certain quantities of aircraft. I would have taken it, year by year, although they were funded as single-year contracts, we were under contract to pick up those options.

However, I must say that there is another side, particularly to the weight incentive elements of the contract. That is, that we did in fact get an airplane that met or exceeded its performance requirements.

There is also a third side to that. When you take weight out, your reliability tends to drop a little bit, because your parts just are not quite as beefy.

Mr. McCURDY. Mr. Chairman, I can state, and I think I have in the report that we filed, that the Black Hawk is a fine system. It has good performance and is of value to the Army. But again, I must reiterate that I hope we don't have these problems again, or we can at least have these problems identified much earlier so we do not experience the $5 billion cost growth. I would hope that the Army has learned a lesson from this experience, and that rather than trying to hold on with a proprietary interest, that perhaps we can work together to deal with these problems, whether it is contracts or whomever, and not be in a position of being locked into a production.

I think it is too late. We have a good helicopter. We just paid too much for it.

Thank you. Mr. Chairman.

Mr. STRATTON. I think what we have got to do is insist that the services, in this case the Army, keep us posted on the cost progress of this particular system, and report to us exactly when and where these cost increases are taking place. That is the best way that we would be notified about them. Whether we can do anything about them when we are notified, is another matter. But at least we ought to know about it in a timely fashion.

UH-60A BLACK HAWK PROGRAM

FISCAL YEAR 1983 PROCUREMENT BUDGET

[Dollars in millions]

Airframe	Aircraft	(96)	$373.7
	Adv. proc.		131.6
Engines	Installed	(156)	100.9
	Adv. proc.		69.1
Avionics	Installed		9.6
	Adv. proc.		6.9
Other GFE			11.7
Changes	Aircraft		12.7
Subtotal			716.2
Spares			16.8
Total			733.0

Colonel ANDRESON. Sir, this is the budget profile for the procurement of 96 Black Hawks, assuming the 1986-1985 multiyear procurement. It includes again the large advance procurement for the airframe, and also, a similar one for the engine.

Bottom line, $733 million, however, if the fiscal year 1982-84 multiyear is approved, this would be my new procurement profile, a reduction of $147.3 million from the Black Hawk account and an additional reduction of $7.9 million from the advance procurement account of the EH-60A Quick Fix program.

Mrs. BYRON. Mr. Chairman, I have a question. When we are talking about airframes, the LAMPS III program is basically the same airframe, is it not?

Colonel ANDRESON. No, ma'am. By parts count it is 47 percent common.

Mrs. BYRON. It is almost half. Are there any flow-through cost benefits in the two programs on multiyear procurement?

Colonel ANDRESON. Yes, Ma'am, there are.

Mrs. BYRON. Has that been discussed or investigated as far as a joint proposal?

Colonel ANDRESON. I can recite to you what the flow-through cost benefits to the LAMPS would be. With our lot 7 procurement, all common materials between the two programs for the LAMPS lot 2 procurement, an option that is good up through December 31 of this year, can be exercised. In other words, if we go on multiyear with our current quantity, and those materials that are common to LAMPS, Seahawk III, we are going to get about a 10 percent price break on that material for LAMPS lot 2.

The same thing is applicable to the LAMPS lot 3 buy, and the Black Hawk lot 8 buy. The option for Sikorsky is good through December 1, 1983.

Mrs. BYRON. So it is good through December of——

Colonel ANDRESON. The option, LAMPS lot 2, BLack Hawk lot 7, is for December 31, 1983. The lot 3 LAMPS and the lot 8 Black Hawk option is good through December 31 of the next year.

Mrs. BYRON. Let me ask you one other question on the Quick Fix derivative in support of Black Hawk multiyear package and $33.3 million in long lead items, for the 12 aircraft which will not be delivered until the last quarter of 1985. I assume the airframe items are also part of the multiyear plan?

Colonel ANDRESON. Yes, ma'am. We have 12 airframes for Quick Fix in the lot 8 procurement.

Mrs. BYRON. Since they are not going to be delivered until the last quarter of 1985, why is the long lead request this year instead of next?

Colonel ANDRESON. Full up EH-60 Quick Fix will be delivered in the last quarter of 1985. However, there is time between when it comes off the Black Hawk production line and the integration of all the antennas and mission gear is completed. That is why the airframes, the actual production airframes are needed earlier in the year, and hence, their advance procurement for airframes is shoved back in time.

Mrs. BYRON. Thank you, Mr. Chairman.

Mr. STRATTON. Colonel, you have 94 frames and 156 installed engines. How many are having two engines instead of one?

Colonel ANDRESON. They all have two, sir. This is the installed engines for the fiscal year 1983. I have a 90-day dock time requirement of engines. I procured the balance between 1983 and 156 as a part of my advance procurement engines with my 1982 budget.

Mr. STRATTON. So the previous engines will round out?

Colonel ANDRESON. Yes, sir, the advance engines in the 1982 budget, together with the 156 installed I am buying this year will give me 192.

Mr. STRATTON. I see.

UH-60A BLACK HAWK PROGRAM—COST STABILITY

Returned $11.3 million in fiscal year 1981.
Fiscal year 1982 program decremented $16.7 million.
Ceiling reduced on lot V airframe contract by $15 million.
Airframe lot VI single year and lot VI-VIII multiyear contracts negotiated as firm price.
Engine contracts firm fixed price.

Colonel ANDRESON. I would like to discuss price stability.

Subsequent to the budget supplemental in 1981, we negotiated the lot 5 contract with Sikorsky. As a result of that negotiation, we did return $11.3 million to the Treasury. Our original program that I briefed this committee on last year was $648.7 million. Our current program is for $631 million, to include application of the latest indices. We have been decremented $16.7 million. I am 100 percent confident we can execute the program within the single year program, within those funds.

Just recently, we have negotiated a $15-million reduction to the ceiling price of the lot 5 fiscal year 1981 contract.

Finally, sir, as you are aware, as I mentioned earlier, the lot 6 and lots 6 throught 8 multiyear contract with the airframer are now firm-fixed price. Heretofore, all airframe contracts had been fixed-price incentive. The engine contract remains on firm-fixed price as it has since the lot 2 procurement.

UH-60A BLACK HAWK PROGRAM COST INITIATIVES

	Completed	Ongoing
Stabilized production buy	X	
Army should cost analyses	X	
Contractor should cost reviews		X
Break out of selected items		X
Single point procurement—airframe (Army/AF) engine (Army/Navy/AF)		X
Accelerated production deliveries		X
Investigated increased production rates		X
Support foreign military sales		X

Sikorsky has initiated should cost reviews with 26 of the major suppliers within their vendor base, representing well over half of the materials, to try to reduce the cost of future procurements. We have broken out selected items. We will continue to break out as conditions permit.

The biggest item we broke out this year was the on board auxiliary power unit. Single point procurement is underway. The airframe procurement is managed by my office for both the Army and the Air Force. With the lot 6 Black Hawk engine buy, I will be managing the procurements for the Army Black Hawk program, Navy LAMPS program, and the Air Force Black Hawk program.

When the EH-60A quick fix comes on line—it will be centrally managed within one contract, focused in my office. We have agreed to accept an acceleration of deliveries up to ten a month for calendar year 1982.

We are also looking in the Army to increase the long term monthly production rate of the Black Hawk to save money and reduce the current estimated final production costs.

Finally, sir, we are supporting foreign military sales.

UH-60A BLACK HAWK PROGRAM SUMMARY

High user satisfaction—system meeets the requirement.
Fielding progressing smoothly—aircraft deliveries ahead of schedule.
Program cost stable—cost management improved.
Multiyear procurement, if approved, will reduce program cost.

Sir, this is a summary chart. Unless you have any questions, that concludes my presentation.

Mr. STRATTON. Thank you very much, Colonel.

Does anybody have any questions? If not, then can you give us a rundown now on the AHIP?

BRIEFING OF COL. IVAR W. RUNDGREN, JR., PROJECT MANAGER, ARMY HELICOPTER IMPROVEMENT PROGRAM, U.S. ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND

Colonel RUNDGREN. Good afternoon, sir.

Sir, I am the project manager for AHIP.

The purpose of the briefing—I will try to hit the salient points.

DECISIONS

November 1979—Special ASARC—agreed with SSG but: New development not affordable; mid 80's IOC solution required; MMS ready for FSED.
December 1979—OSD agreed with ASARC but: Call it AHIP.

July 1980—ASARC principals: Compete inventory aircraft; provide hot day performance.

Sir, a little background on decisions. I started in August 1978. For 1 year we did a study group analysis on the Advanced Scout Helicopter (ASH) and presented it to the ASARC (Army system acquisition review council) in November 1979. The ASARC concluded that we could not afford it and directed that we look at what we could modify in the inventory in the near-term.

We presented this approach to the Office of the Secretary of Defense (OSD), the next month. OSD agreed with the ASARC approach and gave it the title Army Helicopter Improvement Program (AHIP).

Between December and July 1980, we ran some field tests on the UH-1 and the OH-58 with mast mounted sights. We briefed the ASARC principals on the results in July 1980. They said compete two inventory aircraft—the OH-6A and OH-58.

Mr. WHITE. Could you elaborate on what a mast mounted sight is?

Colonel RUNDGREN. I have a description of it.

PROGRAM DIRECTION

To develop and field an improved scout helicopter capability for the mid 80's which incorporates a day/night mast mounted sight (MMS) for target acquisition/designation and improved communications, navigation, and hot day performance.

The program direction from the ASARC was essentially this: Use an existing inventory aircraft, field it in the mideighties, provide a target acquisition designation system with a day-night capability, give it the NOE, nap of the Earth, communication and navigation capability.

Sir, in order that you understand the sideboards that influenced me in developing the acquisition strategy that I did eventually take, you need to understand that I had some congressional intent that I have to pay attention to. Namely, they said, No. 1, use an existing inventory helicopter, don't go with a new development.

CONGRESSIONAL LANGUAGE

Fiscal year 1979 HASC Report 95-1118, 6 May 1978: The Army should investigate the feasibility of acquiring an existing helicopter.

Fiscal year 1979 Joint Auth. Report 95-1402, 31 July 1978: Develop a program that provides an IOC not later than 31 December 1984.

Fiscal year 1981 HAC Report 96-1317, 11 September 1980: Is pleased that the Army has abandoned its former plan to develop a new airframe, in recognition of affordability.

Fiscal year 1981 HASC Markup: The committee recommends additional authorization of $20.9M to Army's request for $5.023M for AHIP.

The committee supports the program presented by the Army to modify an existing inventory aircraft.

Fiscal year 1981 SASC Markup: The committee recommends the addition of $20.9M to accelerate the development to be consistent with the Army's fielding of the new AH-64 attack helicopter.

In fiscal year 1981, the Congress plussed up the 1981 AHIP budget some $20.9 million. What they told us to do was use an existing inventory helicopter, but accelerate the development and the fielding so it coincides with the AAH. That is what got me started in the direction I took.

THE DEVELOPMENT APPROACH

I wanted one prime contractor responsible. I wanted one person I could go to in the event something was going wrong. I did not want to be integrator and try to bring it all together.

Fixed price incentive contract. It is ironic that Mr. McCurdy would mention the cost growth in the Black Hawk. Between 1972 and 1975 I lived with that cost growth problem. The lessons did not go unlearned. I said if we can do something, we ought to change the type of contract. A cost plus contract was to me the only way to go in a new development.

But this is a modification program. I wanted a fixed price contract. I wanted a contractor as concerned about cost as I was. It took a lot of negotiating and a lot of sidestepping, but the contractors finally fell in line and agreed to a fixed-price incentive contract.

Mr. STRATTON. So the culprit was the cost plus contract, is that right?

Colonel RUNDGREN. Part of the problem, sir.

We also have fixed-price incentive options on the first 2 production years, which is unusual in this kind of helicopter development. The prime will bring in the total system, he guarantees the performance, and I do have a small PM shop.

RATIONALE FOR BHT SELECTION

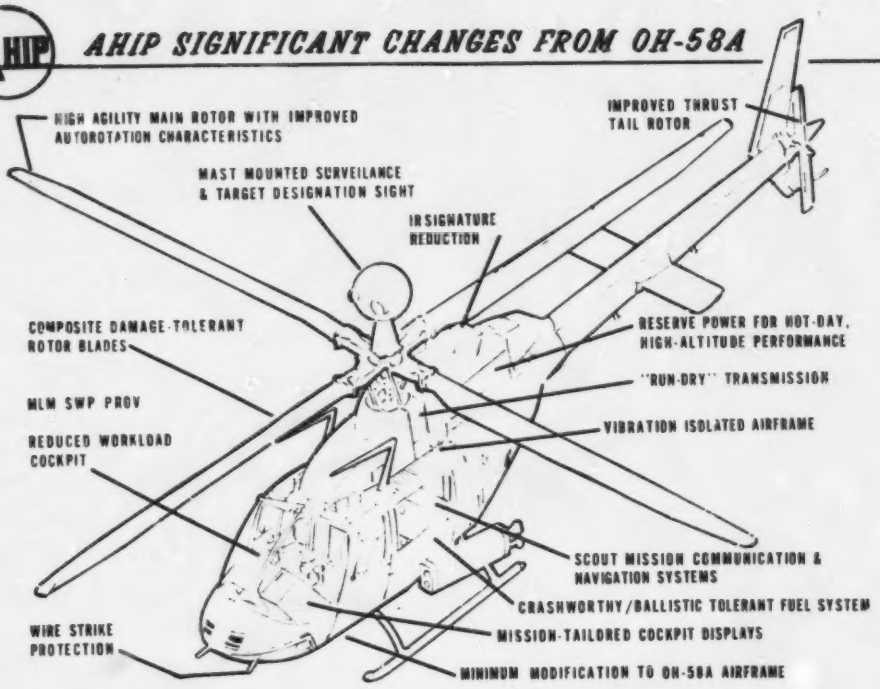
Best overall system design.
Most operationally suitable.
Lower life cycle cost.
Acceptable logistics.
Satisfactory management.
Lower risk.
Most advantageous to the Government.

As far as the selection of the contractor goes, suffice it to say Bell won. It was a black and white selection. There were no gray areas.

But the bottom line is that the real winner was the taxpayer, and the Scout pilot.

This is a version of the AHIP, with a mast mounted sight. I will explain a little more about it. It is essentially the OH-58A airframe. We have beefed up the skids to accept the heavier weight and beefed up the tail.

AHIP SIGNIFICANT CHANGES FROM OH-58A


HIGH AGILITY MAIN ROTOR WITH IMPROVED AUTOROTATION CHARACTERISTICS
MAST MOUNTED SURVEILANCE & TARGET DESIGNATION SIGHT
IR SIGNATURE REDUCTION
IMPROVED THRUST TAIL ROTOR
COMPOSITE DAMAGE-TOLERANT ROTOR BLADES
MLM SWP PROV
REDUCED WORKLOAD COCKPIT
RESERVE POWER FOR HOT-DAY, HIGH-ALTITUDE PERFORMANCE
"RUN-DRY" TRANSMISSION
VIBRATION ISOLATED AIRFRAME
SCOUT MISSION COMMUNICATION & NAVIGATION SYSTEMS
CRASHWORTHY/BALLISTIC TOLERANT FUEL SYSTEM
MISSION-TAILORED COCKPIT DISPLAYS
WIRE STRIKE PROTECTION
MINIMUM MODIFICATION TO OH-58A AIRFRAME

Let me spend a few minutes on the characteristics of the AHIP. Probably the first thing you will notice, Bell has gone to a four bladed rotor and it has a mast mounted sight. The four-bladed rotor is all composite. It is a third generation development. It is flying commercially on the Bell 412. I have flown it, it is a big improvement. The blades are 12.7mm tolerant. We also have space, weight and power provisions for several defensive air to air missiles, should that development come along.

The AHIP also features a workload cockpit, so the pilot and the observer can be more efficient in the mission operation.

It has wire strike protection, is crash worthy, and ballistically tolerant up to 12.7mm fuel cells. We have a 30 minute run dry transmission—the same OH-58 transmission with some improvements to it. So your 6.2 R. & D. programs are spinning off into our contract.

We do have sufficient hot day performance. We were looking at 417 shaft horsepower on the OH-58C model. This is 650 shaft horsepower. A lot of performance and performance growth available.

The tail rotor is now 110 shaft horsepower as opposed to 62, so the pilot does not have to worry about which direction the wind is coming from. Once he spots his hover hole, he goes in. The winds are no problem.

The mast mounted sight. It is a day-night target acquisition designation capability that includes a FLIR—forward looking infrared—the vidicon TV, and a laser range finder with automatic bore sight. McDonnell Douglas (Huntington) Astronautics is the prime subcontractor on the mast mounted site to Bell, and Nor-

throp, the loser in AAH TADS, is the sub on the Electro-Optical system to McDonnell-Douglas.

Now, you may think that is a bad situation because Northrop was the loser. We spent $150 million getting them smart. We are a benefactor from that program, too.

Mr. BENNETT. What does hot day mean?

Colonel RUNDGREN. That is the ability to hover or perform when conditions, atmospheric conditions, such as outside air temperature, is 95 degrees Fahrenheit, and you are at the elevation of 4,000 feet.

Mr. BENNETT. Is that worse than having it cold?

Colonel RUNDGREN. Yes sir. The density of the air on a hot day is much less, and the performance capability of the aircraft decreases.

AIR VEHICLE PERFORMANCE—PRIMARY MISSION, [4,016 LBS.]

4,000 ft. 95° F VROC, 500 FPM.
Airspeed [IRP-4K/95°], 112 KTS.
Endurance, 2.4 hours.
Controllable in 35 KT winds [any direction].

Sir, this is what the contractor has signed up for, 4,016 pounds, guaranteed fixed price. The endurance requirement was 1.9 hours. He was guaranteeing 2.4 hours. This is the controlability that I mentioned. With the 110 shaft horsepower at the tail rotor, the 35 knot requirement is taken care of.

AIRCRAFT PERFORMANCE

	OH-58A	OH-58C basic	OH-58C Mod.	AHIP Spec.
Weights, lbs.:				
Empty (Incl armor)	1783	1944	2482	2825
MEP	(124)	(154)	(545)	(579)
Armament				113
Crew	470	470	[1] 474	[1] 474
Fuel and fluids	466	482	405	604
Mission wt.	2719	2896	[2] 3361	4016
VROC ft/min.:				
4000 ft. 95° F	HIGE	716	HIGE	500
2000 ft. 70°F	600	1114	235	650
VEL. MAX KTS	100	100	98	112
Endurance, hrs., 4000 ft., 95° F	2.7	2.4	1.9	2.4

[1] Includes NVG.
[2] Exceeds qualified wt.

Only two points I would like to make on this slide. This concerns the 58C. If we had to modify the OH-58C model to take the mission equipment package of AHIP, it would gross out at 3,361 pounds, and the maximum allowable gross weight for the C model is 3,200 pounds. So what you would normally do in that case is you reduce the fuel load, but that would impact on your endurance. You get down to 1.4 hours endurance. So the C model fell out as an alternative.

This is the AHIP specification performance. Its mission, gross weight carrying the full mission equipment package, will achieve the guaranteed performance the contractor signed up for.

The point I want to make is that the maximum gross weight capability of the AHIP is 4,500 pounds. So it has about 500 pounds additional growth capability. It also has the power margin to take care of that additional weight.

Sir, you hear frequently that what we are doing is jacking up the nameplate and sliding a new helicopter in. I would like to address that issue.

COMMONALITY BY WEIGHT

	Airframe, MEP & engine	
	Weight	Percent
Common to OH-58A	626	22.2
Other existing	540	19.1
New parts, min. development	405	14.3
New parts, normal development	1,254	44.4
Total	2,825	100
Existing or min. development	1,571	55.6
Normal development	1,254	44.4

Of the empty weight of the aircraft, some 22 percent is common to the existing 58A that is in the inventory. We have taken other existing parts, such as a generator from the Cobra, and are using them in the AHIP.

New parts with minimum development, such as armor plating are going into the seat and around the engine. The new parts with normal development risk, that include the transmission and the mast mounted sight, amount to some 44 percent of the AHIP. So of the total 2,825 pounds empty weight, 44 percent represents new development, and just to calibrate you, a similar figure for Hughes was 32 percent, and for the CH-47D mod program, a similar figure is 66 percent.

AHIP SURVIVABILITY CHARACTERISTICS

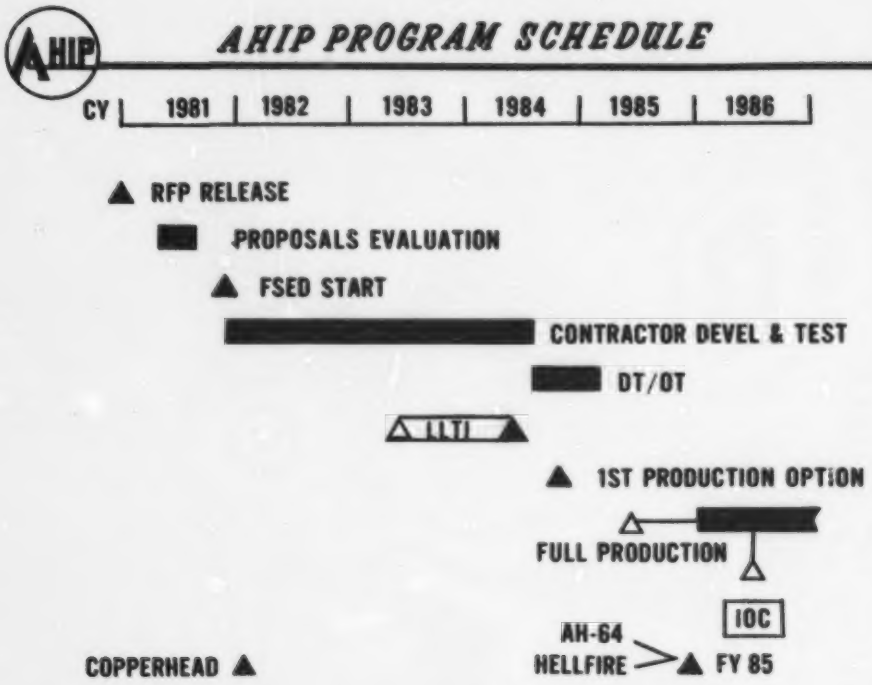
Ballistically tolerant (12.7mm): Main rotor hub and blades, engine centrifical compressor, tail rotor and T/R drive shaft, and self sealing fuel cell.
Armor plating (7.62mm): Crew seats and engine fuel pump, turbine, and fuel control.
Run dry drive system (30 min.).
Engine exhaust IR suppressor and low reflective paint.
Radar warning.
MMS standoff capability.

Sir, some of the survivability improvements to the AHIP.

First, you need to remember we are modifying an inventory aircraft designed in the late fifties. What the contractor has done, has made some improvements in ballistic tolerance to 12.7mm fire, about 30 percent worth, in the area of the main rotor blades—already mentioned, about 12.7 tolerance.

Engine centrifugal compressor. With respect to 7.62mm, weapons, there is about a 70 percent improvement in survivability.

The biggest payoff probably will come from the ability of the pilot to remain masked while using the mast mounted sight, and acquiring the target, and designating.



This is the AHIP program schedule. The RFP was released early January 1981; responses evaluated from April to August 1981; and the contract with Bell, which included the 2 year production options, was signed on September 21, 1981. AHIP is a 41-month program, from the start of FSED to the full-production award. I guess this milestone right there causes the most heartburn. That is the long lead-time request that comes in in fiscal year 1983 for $45 million.

Now, you have to go back to the congressional influence that said we would like an aircraft out as early as possible to be fielded with the AAH. On top of that, the fact that this is a modification program and a low risk program. Probably the mast mounted sight, the repackaging of existing source components is probably the most critical problem that I have to worry about. And that is classified a moderate risk. But because of that, and to get this IOC, to make it compatible with the AAH, and also the Copperhead, we had to initiate long leadtime at this point. I will get into a slide—the next one—which breaks down into specific detail as to what we are doing.

June 1986 is the IOC.

On this slide we have sequenced the long leadtime release points, starting in June of 1983. We will have the DA level IPR [in process review] prior to each release. We will show the test results at that point in time before we make each commitment to long leadtime item procurement. And in this case for 1983, it is the lowest risk items, engines, casings, transmission casings, casting, and microchips, all low risk items.

Following the 1983 long leadtime release, I will have some $33 million committed in constant 1982 dollars. The next IPR in February of 1984 is for a tooling and fabrication release. We will also

have test information by a DA IPR again. Some $37 million will be in this release.

Before the start of DT/OT-II testing, we will have long leadtime release for hardware for the second production option of 44 aircraft.

First production option of 16 aircraft will be signed at this milestone, and full-production after milestone 3.

TESTING COMPLETED BY LLTI RELEASE—JUNE 1983

Two hundred hour endurance tests for main transmission and mast/pylon support beams, input driveshaft and coupling, tail rotor gearbox, and tail rotor driveshaft.

Static tests: Main rotor assembly, 1A castings, tail rotor blade and hub attach joint, and main rotor pylon support.

Fatigue tests (partial): Main transmission and mast, main rotor yoke to mast joint, tail rotor gearbox, main rotor blade assembly, main rotor hub assembly, rotating controls, tail rotor blade assembly, tail rotor hub assembly, tail rotor controls, main rotor fixed controls, and hydraulics.

Whirl tower test.

These are the tests that will be available at the time of the commitment to first long lead time release. We will have performed 200-hour endurance tests on the transmission, the input drive shaft from the engine, tail rotor gearbox, and drive shaft. We will have performed static tests on the main rotor, castings, the tail rotor, and the main rotor support points.

In addition, we will have partial fatigue testing completed on these items, and partial means that the first demonstration testing will have been completed before the other articles go into flight for additional testing.

Mrs. HOLT. What would happen if you deferred the long lead funding to fiscal year 1984? Could that slip 3 months?

Colonel RUNDGREN. No, ma'am. You recall that I mentioned earlier in the briefing that the contractor signed up for 2 years of production options on a fixed price incentive contract, negotiated under competition. If we don't initiate long lead procurement at that milestone, we will have to renegotiate the contract.

Mrs. HOLT. June of 1983?

Colonel RUNDGREN. June of 1983, yes, ma'am. I am very leery of renegotiating a contract that we negotiated under competitive pressure. The name of the game in this program, in addition to fielding a helicopter, is controlling costs, and if I open up the contract for renegotiation, I guarantee you we will lose partial control.

Mrs. HOLT. You don't think Bell would talk about it?

Colonel RUNDGREN. Bell might talk about it, but they still want money in fiscal year 1983. The problem with what they want, they want about $10 million in 1983, just to get started. But that doesn't take care of what the Army requirements are with respect to spares, ground support equipment, manuals, and the other necessary things that have to be done at the same time. We will be playing catchup all the way out.

Mr. STRATTON. Colonel, as I understand, this is a new program which the Army is proposing to us; is that correct?

Colonel RUNDGREN. Sir, this is the third year in R. & D., but it is the first year for procurement.

Mr. STRATTON. It is the first year for procurement. I have some problems on this. The program involves $2.3 billion to modify 578

OH-58 helicopters, and after we have spent $2.3 billion, we are going to have a Scout helicopter with no offensive capability. Wouldn't it be logical to add the mast mounted sight and the laser designator to the Cobra, and then you would have a dual-purpose aircraft that could not only scout but also attack. Why do you have to have two helicopters?

Colonel RUNDGREN. Sir, if I could let General Merryman address that.

General MERRYMAN. The biggest problem we have right now, Mr. Chairman, is not enough gunships. If you could try to convert one of the existing gunships into a scout helicopter, you sort of get it—the secondary problem of the scout, and compound your biggest problem, which is not enough gunships. In other words, Cobra helicopters. If you were to put a mast mounted sight on a Cobra, and you tried to use it as a scout in addition to it being a gunship, you just cannot do both jobs optimally at the same time.

Right now, you have 2,400 OH-58's in the Army today. You have about 1,000 Cobras today. We need a lot more gunships than we have. Those 2,400 OH-58's are marginal as to their operational capability, and do not extend the pilot's vision beyond the unaided eye.

This particular AHIP effort that has been described to you, Mr. Chairman, provides a mast-mounted sight that provides the capability for somebody to sit in that bird, see many kilometers out there, and provides a laser, that will guide the Hellfire, the Copperhead, and Air Force laser-guided munitions.

It also provides the capability for command and control of maneuver forces and for field artillery observation.

What I am trying to paint for you is a picture that shows that it would be a mistake for us to convert our attack helicopters to the scout role.

We have looked at COEA's (Cost Operational and Effectiveness Analyses) in the last 3 years as to whether it would be more cost effective to take a Cobra and put a mast-mounted sight on it and let it perform both the scout and gunship roles.

The COEA shows that the mixed fleet is far more effective.

Mr. BENNETT. I heard everything you said, but I didn't understand, in the sense I don't understand it is a response to the question of why you shouldn't have a combination. You said you needed more gunships, more people to fire. But why don't you get them with all this other equipment to it? You are saying it is too expensive? You never used that word.

General MERRYMAN. In the sense you ask that question, you are absolutely correct.

Mr. BENNETT. His question was why don't you combine them. You just made a real strong case for having things to shoot things down and things that can see. But why can't you have a mix in the same ship?

General MERRYMAN. If you assumed you had enough money to buy more, that would be fine.

Mr. STRATTON. You have Cobras. Why not put an observation capability on them? You don't have special tanks that go out and take a look, and then other tanks that come along and fire. You

have one tank. You have eyes on it so you can see what is going on. Why can't you do this with a helicopter?

General MERRYMAN. What I am trying to explain, sir, is that—we looked at having that capability on the helicopter. It is very expensive. Plus the fact if you are talking about the Cobra, it could not carry the weight of the mast-mounted sight without giving up something else it carries today. So you are talking about a rebuilt Cobra.

Mr. BENNETT. You have to minimize the striking ability of the combat vehicle in order to get the equipment on these to look?

General MERRYMAN. That is right. Unless you changed engines and rotors.

Mr. BENNETT. You don't think a hybrid would be sensible?

General MERRYMAN. No sir.

Mr. BENNETT. The chairman made a good case for the hybrid.

Mr. STRATTON. I think we would have to have a little analysis of this. We are being asked to institute a new program costing $2.3 billion for 578 of these helicopters, which is not a substantial number. I think we if we are going to do our job, we ought to see whether this isn't something that could be acquired, a capability that could be acquired a little bit more cheaply. I think that is essentially the problem.

Mrs. BYRON. Mr. Chairman, may I ask a question?

You are talking about a total 578 requirement, and yet the AH-64 program has been reduced from 536 to 446. Was the AHIP force structure also reduced or did that stay constant?

General MERRYMAN. We wanted more AH-64's than we planned for, and we wanted more AHIP's than we are asking for.

Mrs. BYRON. So they both were proportionately reduced?

General MERRYMAN. Yes, we looked at how many dollars we were told we were going to get. The Army then tried to live within its means over the 5-year defense plan (FYDP) years, saw that we could not afford all the systems we needed for a balanced force and, therefore, we reduced both the AHIP and the AH-64 quantities.

Mrs. BYRON. The laser designating capability with the existence of similar capabilities in the AH-64 itself, the ground locator laser designator, how important is that?

General MERRYMAN. It is very important because you see, for example, our frontline soldiers have a ground laser locator designator, what they call a GLLD, that sits on the ground.

You also have a remotely piloted vehicle (RPV), which would go way out 25, 30 kilometers behind the lines. What you don't have is something that can lase targets right there in the front, unless you use something like AH-64, which you would not want to do because of the cost of the thing.

Mrs. BYRON. What are we talking about sizewise. This versus the Cobra?

Colonel RUNDGREN. Thirty-five foot versus 44 foot.

General MERRYMAN. Four thousand versus 10,000 pounds.

Mr. STRATTON. Any other questions on this?

Mr. KRAMER. Mr. Chairman, I think you raised a good point, Mr. Bennett.

What is the estimated per copy cost of this at the completion of the program?

Colonel RUNDGREN. Sir, the contractor has signed for in the first 2 years of production, $1.34 million a copy in fiscal 1982 dollars.

Mr. KRAMER. In terms of target selection and target acquisition, is this solely for the AH-64, or what other weapon systems will it acquire targets for?

General MERRYMAN. Copperhead is shot out of the 155mm artillery pieces. In other words, any 155 artillery piece can shoot a Copperhead round that is guided by an AHIP laser. What that means is, if you consider the fact that 75 percent of the artillery in the Army is 155mm, which can be supported by AHIP, the Russian armor coming against the American Army would have to face the probability that it could be engaged with Copperhead rounds from nearly every spot on the battlefield. With this particular aircraft, you will have the mobility to go where you must and lase any target.

Mr. KRAMER. How does that work with relationship to the artillery?

General MERRYMAN. You find a target, communicate its location to the artillery, and command it to fire a Copperhead round which flies into what we refer to as a basket, or an area in the sky. Before it gets into that area, the target is illuminated with the laser. The reflected energy from the laser guides the Copperhead to the target.

Mr. KRAMER. Is there a computer system involved?

Colonel RUNDGREN. Yes, it is housed in the cockpit of the AHIP. The AHIP has the ability to lase the target and determine range in kilometers from the aircraft and automatically compute target coordinates, in eight digit coordinates, and by automatic target handoff system, send them right back to TAC fire at the artillery fire direction center. In a matter of seconds he can call fire for effect on the first round. That is in conventional artillery.

Now, with the laser guided Copperhead round, he would provide the coordinates to the artillery, they would tell him when the round is underway and warn him 20 seconds prior to impact, he would then lase the target, and the round would come in on the target.

Mr. KRAMER. In other words, they are capable of direction once the round has been fired,

Colonel RUNDGREN. Correct.

Mr. KRAMER. So almost kind of a baby cruise missile type of thing, in terms of homing in on the target?

Colonel RUNDGREN. A mini cruise missile with assistance from AHIP.

Mr. KRAMER. You envision using it primarily in that role?

Colonel RUNDGREN. It will work with the artillery, with the attack helicopters, and with the air cavalry.

Mr. KRAMER. Can this do anything in the way of target designation, target acquisition, that the AH-64 will not be able to do itself?

Colonel RUNDGREN. It will be able to lase a target for the AAH, hand off the target coordinates, and the AAH will pick it up. He

will fire, and the AHIP will continue lasing, while the AAH is not exposed.

Mr. KRAMER. This thing will have to be exposed. But it has a smaller profile?

Colonel RUNDGREN. Only the mast-mounted sight will be exposed. In addition to just Hellfire and Copperhead, there are four Air Force systems that it is compatible with—GBU-10, 12, 22, and 24, and the new development Maverick which the Air Force is developing for the Marines.

Mr. WHITE. The Army is experiencing problems with the cost of Copperhead. What happens if one day in the not too distant future the Army says, "We cannot afford the Copperhead, and we are going to terminate that program?" What does that do to the cost effectiveness of the AHIP, since the Apache can lase the target for itself—if you take away the CLGP designation mission?

General MERRYMAN. I don't know that we have to run a COEA without the Copperhead but we would still need AHIP to work with attack helicopters and air cavalry units.

One thing that I have to come back to, is that the current Scout helicopters cannot see. So we have to do something. My guess is—and I will get you more later on this, because I don't honestly know if we have run an analysis—is that we would want the AHIP even if we terminated Copperhead.

PROGRAM DOLLARS

[ESC dollars in millions]

RDT & E	Fiscal year—						Total
	Prior	1981	1982	1983	1984	1985	
Programmed	$7.4	$25.7	$38.5	$75.8	$55.7	$25.0	$228.1

[Dollars in millions]

APA	Fiscal year—						Total
	1983	1984	1985	1986	1987	To complete	
Programmed	$45.1	$167.4	$232.9	$249.2	$418.6	$1,190.3	$2,303.5
Proc. quantity	16	44	56	92	370	578	

Colonel RUNDGREN. These are the program dollars with respect to R.D.T. & E. and procurement. A total of $228.1 million. One of the problems that Colonel Andreson focused on was funding to target price. In my program, I am funded to ceiling, and that cost growth problem should not exist in AHIP.

With respect to procurement, as you have noticed, it is already $2.3 billion for a buy of 578. We are asking for $45 million to field the AHIP starting in fiscal year 1983.

COST AND PRICE CONTROL MANAGEMENT

Full-scale engineering development (FSED)	Design to unit production cost (DTUPC)	Production unit cost
Req./desired specs	Corporate commitment	Should cost.
BCE/ICE (CAIG)	REQ./desired specs	Economic production rate.
Consultants	Tradeoff analysis	MYP
FPI contract	ECP's (configuration control)	2-year production option.
CSCSC	Periodic program reviews (prime and principal subs).	
Program cost control (DARCOM)	Prod readiness reviews (M.M. & T.)	
Configuration control	PEP	
Periodic PROG reviews		
TRACE		

Mr. STRATTON. I think we are running out of time here. As I said, I think we are going to have to make a rather serious decision whether we want to go ahead with procurement. I would like to get some of the information that has gone on, as I understand some rather active discussions within the Army, as to whether this really is necessary. This looks to me like a kind of AWACS for the helicopter. Couldn't we do it with a number fewer than 578 of these. So I think this is a little premature until we decide whether we really want to move with it.

Mr. BENNETT. Could I ask a question at that point?

Could I ask, what do you do now?

In other words, have you got two sets of helicopters, one to fire at the enemy and the other to look?

General MERRYMAN. You don't have a missile with a laser capability on a helicopter.

Mr. STRATTON. But you are going to have a laser capability on the AAH, as I understand it.

General MERRYMAN. That is correct, sir.

Mr. STRATTON. That is the point.

General MERRYMAN. The difference is, Mr. Chairman, if you have this bird rather than take an expensive AAH to look for targets, it can wait while this small, relatively inexpensive, helicopter finds the target. Over time it starts to pay off because——

Mr. BENNETT. You mean the surveillance is cheaper?

General MERRYMAN. That is correct.

Mr. BENNETT. How much cheaper?

General MERRYMAN. Let me give you the costs.

Mrs. BYRON. You said 1.47.

Mr. STRATTON. Only $2.3 billion; very cheap.

General MERRYMAN. Mr. Chairman, I said relatively, sir.

Mr. BENNETT. It doesn't sound real cheap.

General MERRYMAN. No; I wish they were.

Mr. BENNETT. We are just trying to find out if there isn't a cheaper way of doing it. That is what the chairman is trying to do. He would like to confine it if he could or do something to make it less.

Mr. STRATTON. It's my understanding this is not exactly an open and shut thing. Somebody in the Army staff got the majority and so they have put it in the program. But there was quite a debate as to whether we really needed both systems, as I understand it.

General MERRYMAN. What he would like to do would be to take a look at that debate.

Mr. Chairman, let me clarify that, because that is not the case at all.

Yesterday we had an Army System Acquisition Review Council (ASARC), which is our decision body that is chaired by the Under Secretary and Vice Chief of Staff. I wouldn't want to be misleading. The ASARC decision was that it wants this aircraft, very much to perform the missions I described.

Mr. STRATTON. But I have found in the long time I have been in this particular job that the Army is not always infallible. We had a tank called the Sheridan tank some time ago and the DSARC went ahead with that. It's only a few years ago that we had an enterprising Secretary of Defense who said, as long as we are building a new tank, why don't we put everything on it, that beautiful, mature, turbine engine that has been tested so much and why don't we go into a program with the Germans so we can get their gun and the DSARC. We raised some objections in the committee, at least I did. I didn't get too much support. The DSARC went ahead with it.

All I am trying to do is find out what the guy on the other side said, because somebody made some mistakes in the past. Maybe somebody is making a mistake today. We are faced with a serious problem. We want to try to support the President's budget, but a lot of other people want to cut it.

Here is a new program that you are still in the R. & D. stage, but you want us to commit ourselves over the years to a $2.3 billion program. We have got to make the crucial decision, is this really necessary at this particular time. That is really all we need.

Do you want to add something to that, Mr. White?

Mr. WHITE. Just one question. How long have you been in full-scale development?

Colonel RUNDGREN. Since November 1 last year, sir.

Mr. WHITE. November 1; and the full-scale development period runs until when?

Colonel RUNDGREN. Until just after DT/OT II, which is January 1985.

Mr. WHITE. I think the chairman's point is that the committee is being asked to decide on procurement funding basically within 4 months after you start development.

Mr. BENNETT. How much have you got in sunk costs on the AHIP?

Colonel RUNDGREN. Sir, right now, $24 million as of the end of March.

Mr. BENNETT. You mean that is all the R. & D. cost on this?

Colonel RUNDGREN. So far. That total R. & D. budget is $228 million, sir.

Mr. BENNETT. I see.

Colonel RUNDGREN. Sir, if I could comment on that, I appreciate that problem, you know. We have intentionally structured the long lead time releases such that the low risk items go out first. You know those items we won't have too much problem with. I am trying to get a bird out with respect to the congressional intent.

General MERRYMAN. If I could say one other thing——

Mr. STRATTON. What do you mean by the congressional intent? Give us the papers on that, where Congress told you to do that.

General MERRYMAN. We will be glad to, sir. You all have been trying to get us to do our job better for years.

One of the things you have been trying to tell us to do is get this thing in the field faster, consistently.

Mr. STRATTON. I don't know that I have been telling you.

General MERRYMAN. No, sir.

Mr. STRATTON. That is why I am a little unfamiliar with it.

General MERRYMAN. Yes, sir; we will get you that.

[The following information was received for the record:]

The congressional interest that Colonel Rundgren was referring to is contained in the language of the following congressional reports for fiscal year 1981: page 87 of the House Armed Services Committee (HASC) Report Number 96-916, dated April 30, 1980; page 292 of the House Appropriations Committee Report Number 96-1317, dated September 11, 1980 and page 97 of the Senate Armed Services Committee Report Number 96-826, dated June 20, 1980. The HASC language states:

"The committee recommends additional authorization of $20.9 million to the Army's request of $5.023 million for the Army Helicopter Improvement Program (AHIP) and a reduction of $3.481 million from the Army's request of $6.466 million for the Aircraft Weapons Program."

The committee further stated:

"The committee supports the program presented by the Army to modify existing inventory aircraft to carry out the scout helicopter mission. The recommended additional authorization will allow the Army to structure both a developmental and procurement program that will accelerate deployment of this much needed capability.

The recommended reduction in authorization in the Aircraft Weapons program is directed at the night capable mast mount sight project. The committee interposes no objection to the effort but requests that it be carried out within the AHIP program."

In its report, the HAC states:

"The Army budgeted $5,045,000 for the Army Helicopter Improvement Program. The objective is to provide a scout helicopter based on an existing airframe. The Committee agrees that a requirement exists, and is pleased that the Army has abandoned its former plan to develop a new airframe, in recognition of the problem of affordability. The add-on above the budget of $20,900,000 recommended by the House and Senate Armed Services Committees appears warranted in view of the need. The Committee recommends an add-on above the budget of $20,900,000, resulting in a recommended total for Army Helicopter Improvement Program of $25,945,000."

The SASC in its report on the 1981 fiscal year authorization states:

"The Army modernization program called for a new scout helicopter to improve capabilities with the new AH-64 attack helicopter. In lieu of a new helicopter, the Army is opting for an improvement program using a mast-mounted sight in an existing helicopter airframe. The committee recommends the addition of $20.9 million to accelerate the development to be more consistent with the Army's fielding of the new attack helicopter."

To us, the message has been clear. Base the scout program on an existing airframe and field it quickly. The AHIP program and the acquisition strategy that Colonel Rundgren has presented to you today does just that.

Mr. STRATTON. As I say, I think what we need now is that information, and I think the CH-47 is no particular problem. So if you could put that into the record we will have that.

General MERRYMAN. Be glad to, sir.

WRITTEN STATEMENT OF COL. DEWITT T. IRBY, JR., PROJECT MANAGER, CH-47 (CHINOOK), U.S. ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND, ST. LOUIS, MO.

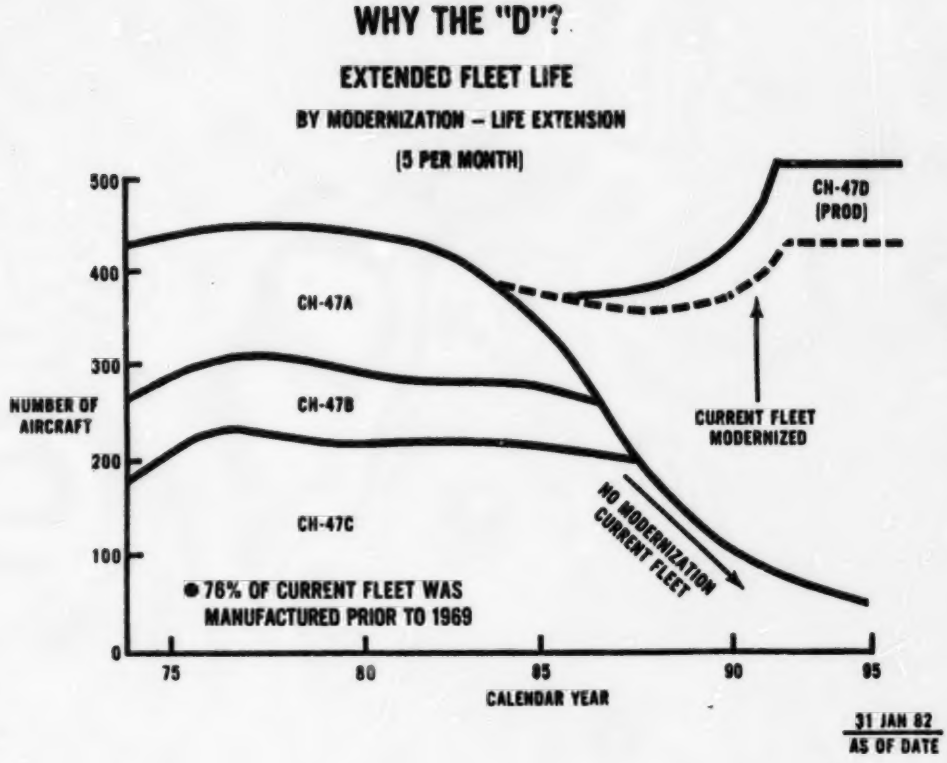
CH-47 MODERNIZATION PROGRAM

Sir, I am Col. DeWitt T. Irby. I assumed the duties of CH-47 project manager in July 1981. I will provide a program status briefing on the Army's CH-47 helicopter modernization program.

INTRODUCTION

The CH-47D is a tandem rotor transport helicopter that is the combat commander's battlefield sustainer. Its uses are many, for example, artillery movement, missile transport, personnel movement, aircraft recovery, medical evacuation, and resupply of ammo and fuel are just a few of its uses on today's battlefield. The CH-47 is capable of carrying either 33 troops, 24 litters or cargo internally, and has 3 hooks for carrying loads externally. Maximum payload capability is in the order of 25,000 lbs. Individual mission payload capability is dependent on ambient conditions and mission length. The CH-47D satisfies the Army's medium lift requirement for a 30 nautical mile radius under conditions of 4,000 ft. pressure altitude and 95° F with a payload of 15,000 lbs.

In the mid 1970's when the Army was faced with an aging inventory of medium lift helicopters the decision to modernize the existing CH-47 fleet was selected as the most cost effective method to retain the required medium lift capability in the Army's aviation inventory.

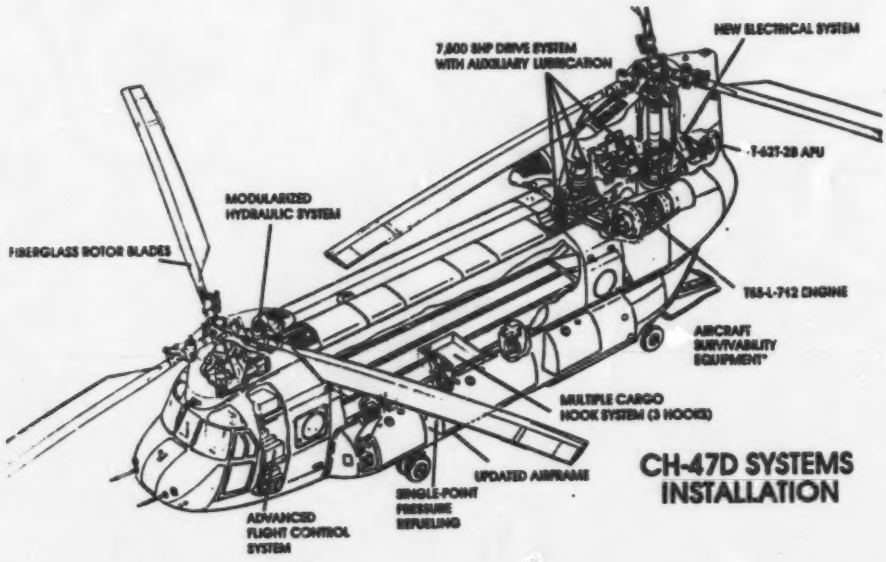


20-YEAR LIFE CYCLE

This chart indicates the retirement of the existing CH-47A, B, and C model aircraft with the standard 20-year life cycle if planned modernization did not occur. The broken line reflects the approved CH-47D modernization program of 436 helicopters.

The top solid line indicates total CH-47D assets which includes procurement of 91 new CH-47D helicopters. The total program will allow the Army to achieve its authorized acquisition objective (AAO) of 518.

THE CH-47D



SYSTEM DESCRIPTION—IMPROVED SYSTEMS

This chart shows the improvements included in the modernization of these aircraft. These improvements are the result of an extensive research and development effort that was oriented totally toward improving the reliability, availability, maintainability and survivability of the CH-47D helicopter.

The fiberglass rotor blades provide a new dimension in safety and survivability in that they can withstand hits from a 23mm high explosive round.

The modularized hydraulic system reduces hoses, leak points, and maintenance down time.

The new electrical system has an increased power capability and improved survivability and maintainability.

Flight handling characteristics are improved with the advanced flight control system [AFCS] which automatically maintains desired altitude, airspeed, and heading.

The modernized transmission systems incorporates new metal technology and completely integrated and self-contained subsystems. This results in an on-condition removal.

The multi-hook cargo suspension system consists of three hooks. This arrangement provides more load stability at higher airspeeds and the ability to deposit three loads at three separate locations in a single mission.

The improved auxiliary power unit [APU] is more reliable and provides built-in test equipment [BITE] for fault detection and isolation.

The airframe has undergone structural modifications. The structural changes were made to accept the new subsystems, reduce vibration, and reduce maintenance requirements.

The new single point pressure refueling system provides the capability of pressure refueling all or any of the six fuel tanks selectively using current commercial or military nozzles. The gravity fill ports are retained.

Production CH-47D helicopters have complete provisions for the following aircraft survivability equipment for vulnerability reduction purposes:

AN/APR-39V(1): Radar warning system.

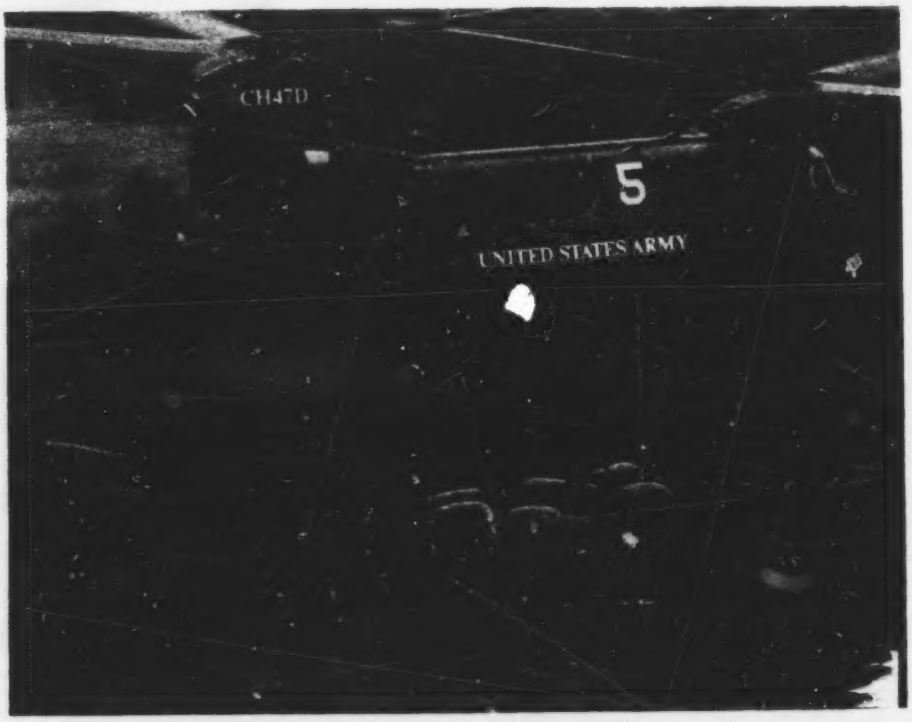
AN/ALQ-156: Missile detector system.

M-130: Flare dispenser.

This production configuration is frozen and no major changes are expected.

CAPABILITIES

The performance capability of the aircraft and the versatility of the multi-hook system allows the D model Chinook to carry a variety of equipment.



BLIVETS

The six blivets shown here contain 3,000 gallons of JP-4 jet fuel. Total weight is 22,000 lbs. The triple hook sling arrangement allows 1,000 gallons of fuel to be placed at three different locations on a single flight.

ROLAND

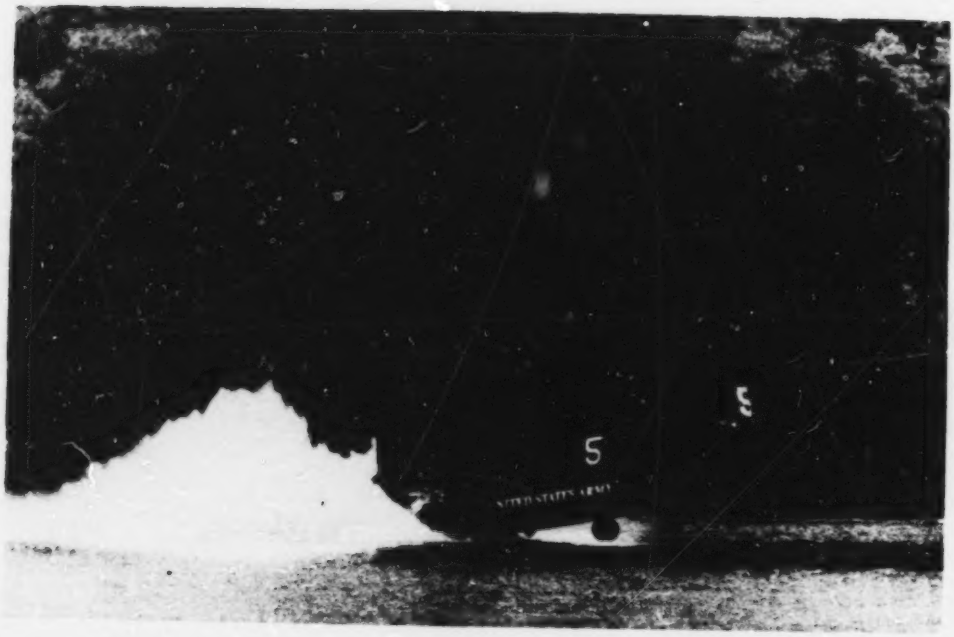
This is the Army's new ground-to-air missile system, the Roland. The Chinook airlifted this 24,000 lb. load during the Roland air-transportability test. As you know, the Roland program was canceled; however, the first deliveries of this system are in the Army's RDF.

M198

A first for a medium lift helicopter is the ability to lift in a single load the M198 howitzer, eleven man gun crew, and 32 rounds of ammunition. Total weight is 21,500 lbs.

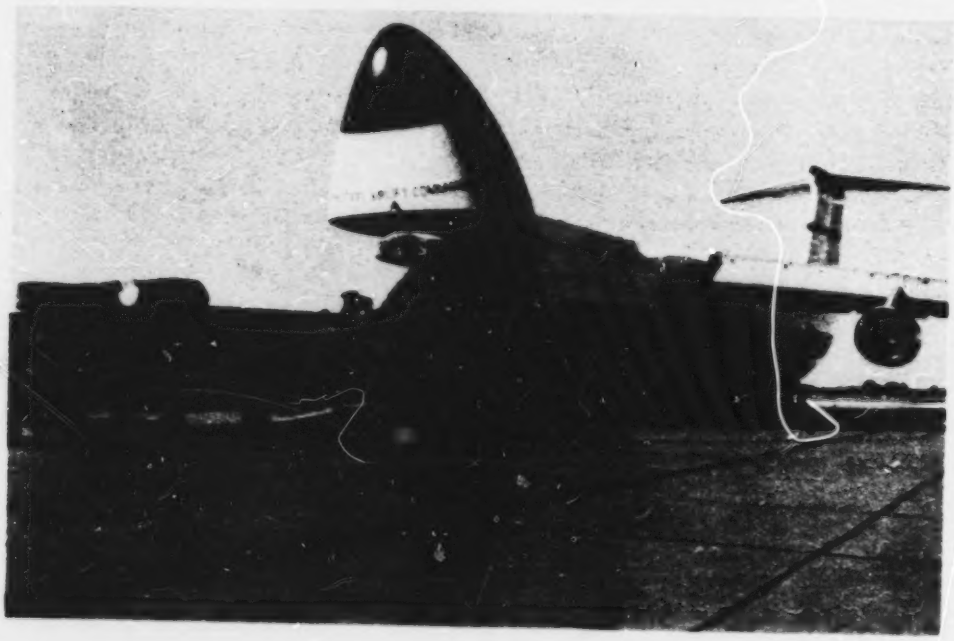
5-TON TRUCK

Shown here is a 5-ton truck weighing 23,000 lbs. and it is the prime mover for the M198.



TESTING

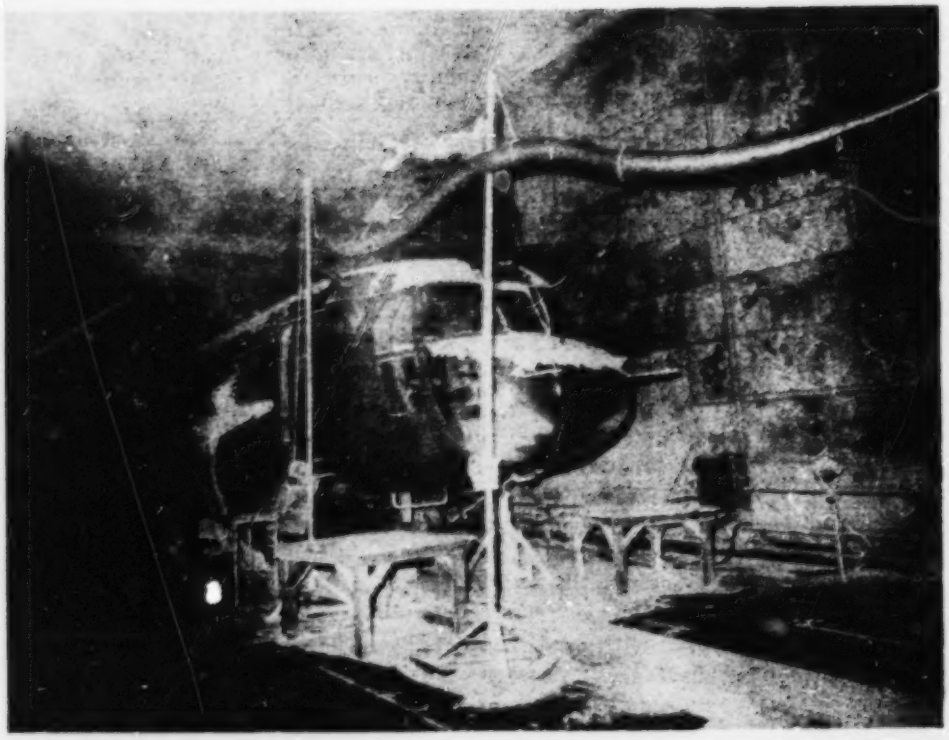
In the area of prototype testing, over 2,000 hours of testing has been completed on 3 prototype helicopters. This includes: Contractor; preliminary Army evaluation; developmental and operational; transportability; external cargo handling; ram growth/maturity; desert; climatic hangar; and icing tests.



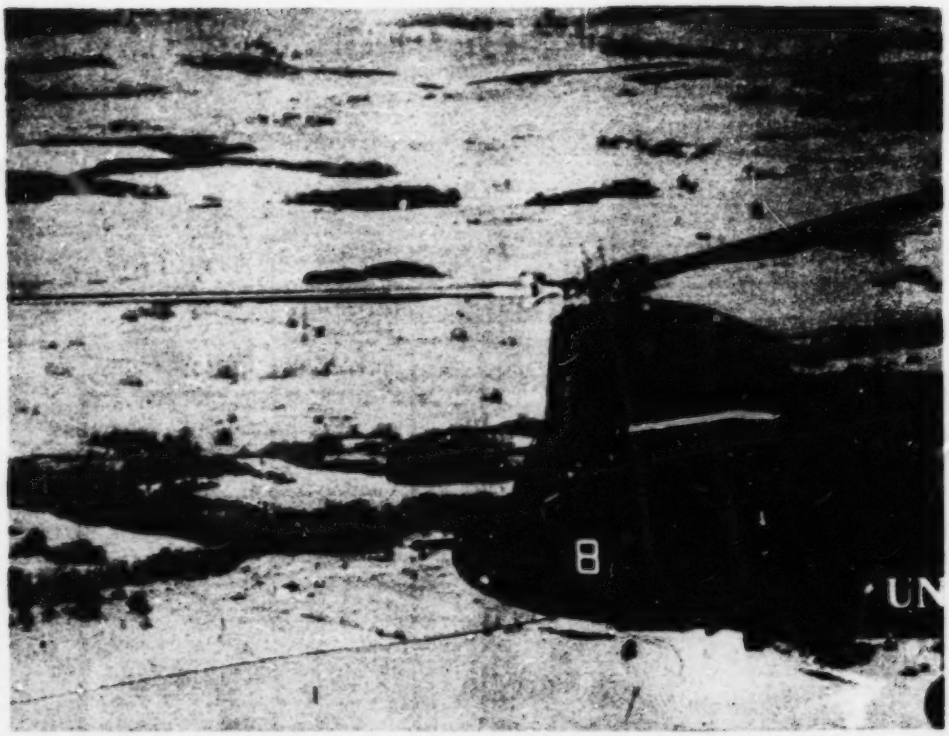
TESTING

In the area of prototype testing, over 2,000 hours of testing has been completed on 3 prototype helicopters. This includes: Contractor; preliminary Army evaluation; developmental and operational; transportability; external cargo handling; ram growth/maturity; desert; climatic hangar; and icing tests.

The completed evaluation of our 82 flight hour desert test this past year revealed that aircraft performance, system operation, rotor blades, and engine condition were not degraded in this environment.



Additionally, climatic hangar testing was performed over a period of 53 days. The aircraft engines and systems were successfully demonstrated in the required operational range of −50°F to +125°F.



The icing test successfully demonstrated the CH-47D's capability to operate in a moderate icing environment.

The reliability of the CH-47D helicopter after 2,000 hours of flight testing has exceeded the CH-47C baseline. The current estimate of the CH-47D based on this test base and engineering analysis, is that it will achieve an approximate 68 percent improvement over the CH-47C baseline.

The current estimate of the maintainability of the CH-47D, based on data mentioned above, is that it will achieve a 22 percent improvement over the CH-47C baseline.

PERFORMANCE SPECIFICATION STATUS

SOURCE:
DCP AND CONTRACT

CH-47 MOD
PROGRAM

KEY PERFORMANCE SPECIFICATIONS	MEETS SPECIFICATION			EXPLANATION
	YES	NO	MARGINAL	
1. MISSION I PAYLOAD 15,000 LB	X			15,856 LB
2. MAX SPEED 155 KT	X			158 KT
3. WEIGHT EMPTY 23,189 LB	X			23,093 LB
4. SERVICE CEILING (ONE ENGINE INOPERABLE) 10,000 FT	X			12,800 FT

31 JAN 82
AS OF DATE

The performance demonstrated during these tests is summarized on this chart. The CH-47D has met or exceeded all specification requirements.

I do not anticipate any change in these performance figures.

FIELDING LOGISTICS SUPPORT STATUS

Element	Status	Availability
Publications	On schedule	December 1982.
Ground support equipment	On contract	December 1982.
Test measuring and diagnostic equipment	Test package in work	December 1982.
Training devices	Contracted for/RFP released	February 1983.
Trainers	On contract	January 1983.
Training (IKPT)	On contract	August 1982.
Provisioning	Completed	N/A.
Spares	On contract	November 1982.
Transportability	Completed	N/A.

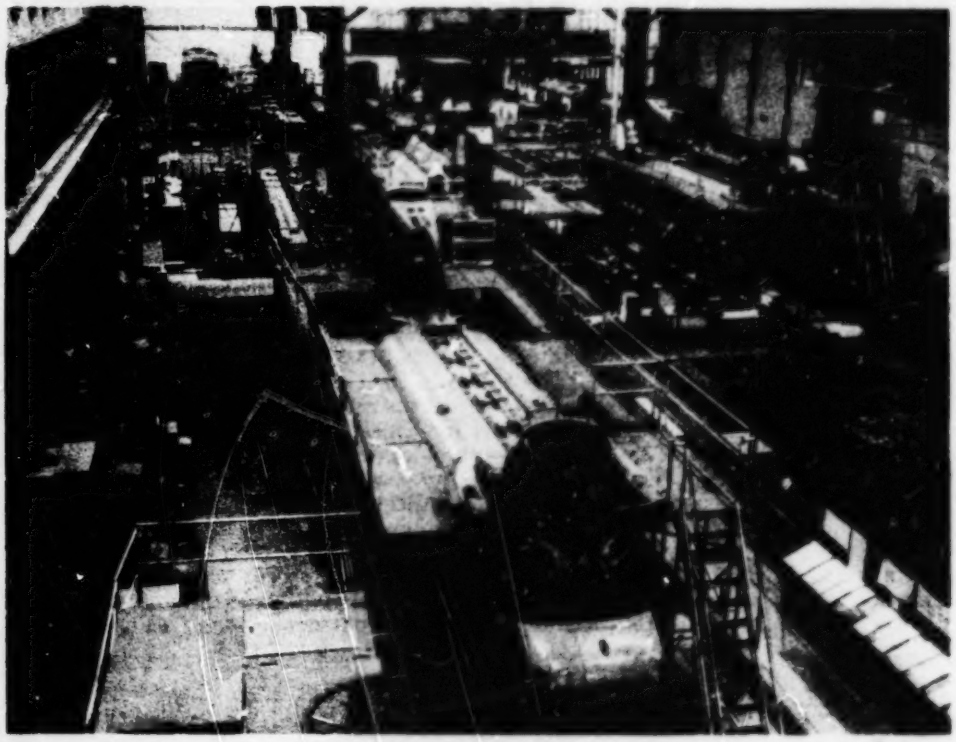
And now turning to system support and fielding.

As you can see, all required support for the CH-47D fielding is on contract and on schedule.

MATERIEL FIELDING

Item	Status	Available
Materiel fielding plan (FORSCOM)	Coordination process	May 1982.
Materiel fielding team	Identified	On-site November 1982.
New equipment training team	Contractor trained August 1982	On-site December 1982.

The final mission support plan has been received from FORSCOM. The approved materiel fielding plan for FORSCOM will be delivered in May of this year. The materiel fielding team (MFT) and new equipment training team (NETT) have been developed and will be on station concurrently with delivery of the 1st aircraft to Fort Campbell, Ky. in January 1983.



PRODUCTION STATUS

The CH-47 modernization program is a model program. It has been on or ahead of schedule throughout the R. & D. phase and continues ahead of schedule into the production phase.

First production aircraft: Rollout—February 22, 1982, first flight—February 26, 1982, and first delivery—May 20, 1982.

Rollout occurred February 25, 1982, first flight was successfully accomplished on March 5, 1982, and the first aircraft will be delivered to the Army 11 days ahead of the contractual requirement of May 31, 1982.

PROCUREMENT FISCAL YEAR 1981

Nine modernized aircraft.

Support including: Peculiar ground support equipment, technical publications, and training.

Long lead items for fiscal year 1982.

Turning now to procurement. During fiscal year 1981 a contract for modernization of 9 CH-47D helicopters and support items such as ground support equipment, technical publications, and training plus long lead time items for fiscal year 1982 was awarded in October 1980. This contract is within cost and on schedule. First aircraft delivery as I've already stated will be May 20, 1982 which is 11 days ahead of the contract schedule.

PROCUREMENT FISCAL YEAR 1982

Nineteen modernized aircraft.

Support including: Peculiar ground support equipment, technical publications (changes), and training.

Long lead items for fiscal year 1983.

On December 18, 1981, we awarded our second contract for modernization of 19 CH-47D helicopters and support plus long lead items for the fiscal year 1983 program. Four aircraft have been inducted and are in work. The output from these two contracts represent the first IOC unit and the initial training base helicopters.

Multiyear procurement planned for fiscal year 1983

Fiscal year:	
1983	24
1984	36
1985	48
Total	108

During this year instead of the traditional annual contract for fiscal year 1983 airframe requirements, I intend to combine the fiscal years 1983, 1984, and 1985 requirements and pursue a multi-year contract for a total of 108 aircraft. I believe the potential for significant savings exists if multi-year procurement is utilized. This savings would be represented by reducing material cost by approximately 10 percent and production labor cost about 5 percent from the cost of annual contracts for the same period. Savings of approximately 6 percent is projected over the life of the contract. Further, by adding long lead items for the fiscal year 1986 and fiscal year 1987 airframes the overall savings could approximate a 10 percent figure.

For comparison purposes, the request for proposal being prepared for fiscal year 1983 will include a requirement to price the multi-year quantity and annual quantities for the three years involved. When we validate the savings, after a review of the proposals and a comprehensive should cost at Boeing Vertol, we will come back to you through OSD to obtain approval for multi-year procurement. In the event that multi-year procurement is not approved in fiscal year 1983, the annual proposal can be used as a fall back position to award a contract for the fiscal year 1983 requirement.

COMPARISON OF MULTI-YEAR VS ANNUAL ACQUISITION COST FOR THE CH-47 MOD AIRFRAME

[Escalated dollars in millions]

	Fiscal year—			
	1983	1984	1985	Total
Quantity	24	36	48	108
Multi-year cost	193.3	241.7	322.9	757.9
Annual cost/TL	193.3	257.2	349.9	800.4
Multi-year savings	0	15.5	27.0	42.5

Note.—These are contract dollar values not total program dollars. The balance of program dollars are for requirements not included in MYP. There is no requirement for additional funding to execute a multi/year or annual contract in fiscal 1983.

This chart compares cost for annual versus multi-year airframe contracts. The projected savings over the multi-year period total $42.5 million.

Items in the program not considered for multi-year procurement include GFE, spare parts, and support such as technical representatives.

Modernization contractor involved in MYP preparation.

CH-47 modernization program ready for MYP.

Boeing Vertol, the aircraft modernization contractor, is enthusiastic about the prospects of multi-year procurement and, in fact, has canvassed all major vendors for optimum pricing and delivery of multi-year quantities.

The contractor's confidence in their ability to price and support a multi-year effort has resulted in contractor commitment to a fixed price contract.

The configuration is stable, quantities are fixed, and confidence in contractor capability is very high. I believe the CH-47 MOD program is ready for multi-year procurement.

Mr. STRATTON. Then we can adjourn for the day and we will have an opportuity to have the staff study the material you gave them.

General MERRYMAN. We will furnish you all we have, sir.

Colonel RUNDGREN. Appreciate your attention, sir.

Mr. STRATTON. Thank you.

[The following questions were submitted to the witness to be answered for the record:]

Mr. STRATTON. The budget includes $45.1 million for long lead items to begin the Army Helicopter Improvement Program (AHIP) Program. These funds will not be placed on contract until the third quarter of fiscal year 1983—April—June 1983. The first OH-58's will not be inducted for modification until the 4th quarter of fiscal year 1984 and the first delivery is the 1st quarter of fiscal year 1986.

The first flight of an R&D AHIP will not occur for more than a year which means this committee is being asked to approve the start of procurement funding a year before the first prototype flies. Deferral of this funding to fiscal year 1984 would result only in a few months slip since this is a late 3rd quarter obligation. If the contractor agrees to extend the fixed ceiling price option period to the 1st quarter of fiscal year 1984, what would be the impact of deferring this request until next year?

ANSWER. The deferral of all fiscal year 1983 procurement funds for long lead time items will impact on both the Army Helicopter Improvement Program (AHIP) schedule and contract cost control efforts. These impacts are:

a. A slip in initial operational capability of approximately 6-12 months and the delay of an urgently needed day/night, adverse weather aerial scout and laser designator for Copperhead, Hellfire and attack helicopters.

b. A negation of the benefits of the additional $20.9 million fiscal year 1981 RDT&E funds added by Congress to accelerate the AHIP development and fielding.

c. A loss of the advantage of the fixed price two year production options negotiated under pressure of competition. The prime contractor will not extend the fixed price option without consideration (renegotiating the contract).

d. The Army would forfeit a bold and aggressive contract cost control technique which was initiated through a vigorous competition. The overriding consideration in maintaining this cost control is precluding such contract modifications.

With regard to a partial deferral of fiscal year 1983 procurement funds, discussions with the prime contractor on March 24, 1982, have established that a minimum of $11.8 million in fiscal year 1983 funds is required to protect existing ceiling price options and schedule. The remaining fiscal year 1983 contract funding is required no later than February 1984. In addition, fiscal year 1983 funds in the amount of $13.2 million are required in June 1983 to protect the schedule for procurement and delivery of government furnished long lead time items (LLTI) (engines and avionics) to the prime contractor (a conuition of the options) and for peculiar ground support equipment (PGSE) to support the aircraft when fielded. Thus, the minimum fiscal 1983 requirement is $25.0 million. A reduction in funding to this minimum would require the addition of $20.1 million to the fiscal 1984 request which could be obligated prior to the end of February 1984.

The following discussion provides additional clarification of statements made in the questions. First flight occurs in July 1983, one month after the first increment of long lead time item (LLTI) release. Bench qualification of the LLTI will have been completed.

A full up system first flight (with operational MMS) occurs three months later—September 1983. The induction of OH-58A's is paced by having new/replacement components at the airframe contractor's facility at time of induction. The prudent

procurement of low risk long lead time items in fiscal year 1983 (i.e., engines, castings and microchips) does require Committee approval approximately one year prior to first flight. However, the intentional sequential scheduling of the LLTI and DA level reviews of pertinent test data prior to dollar commitment provides a logical and reduced risk approach to early fielding. New LLTI must be procured 24-28 months in advance of 1st delivery. Initial aircraft to be modified must be inducted to the modification line approximately 12 months prior to 1st delivery. Although the contractor agrees that he could delay $20.1 million LLTI funding to February 1984, additional schedule risk would be incurred by this action. This increased risk is acceptable only if the additional $20.1 million is added to the fiscal year 1984 funding and can be released by the February 1984 LLTI contract cutoff.

Mr. STRATTON. How important is laser designating capability with the existence of similar capability in the AH-64 itself, and GLLD (General Locator-Laser Designators) and RPV's to locate targets?

ANSWER. The Army Helicopter Improvement Program (AHIP) scout is an essential element in the prosecution of the close combat combined arms battle because the AHIP scout and its crew must perform the following functions:

a. Coordinate/lead the mission (command and control).
b. Coordinate with the ground commanders.
c. Acquire targets.
d. Select firing positions for the attack helicopter.
e. Assist attack helicopter movement into battle positions.
f. Hand off targets.
g. Provide local security.
h. Adjust and laser designate for indirect fire during day/night limited visibility.
i. Conduct reconnaissance and security missions. All of the alternatives mentioned in the question, the AHIP, the AH-64, the Ground Locator—Laser Designator (GLLD) and the Remotely Piloted Vehicle (RPV) have the capability to determine target range and azimuth and provide laser spotting for laser guided weapons. However, only the light, agile, mast mounted sight (MMS) equipped helicopter combines the mobility, survivability, responsiveness, and cost-effectiveness suitable for the scout role. The AH-64 can designate targets for itself, could designate for Copperhead, and could perform the scout mission if necessary. However, this mission is not a primary one for the attack helicopter and would take it away from its primary mission of defeating enemy armor. The Army is procuring the minimum essential number of AH-64's for the antiarmor mission. Giving the AH-64 the additional mission of designating for Copperhead will degrade significantly the Army anti-armor capability in close combat.

GLLD is essential to the ground fire support team in the adjustment of conventional artillery and laser designation for precision guided munitions. However, it does not have the mobility to operate with attack helicopters or air cavalry units nor can it rapidly move around battlefield obscurants to obtain target line of sight. The fire support team operating with GLLD cannot perform many of the scout functions listed above, such as command and control.

RPV provides an extension of the 'eyes' of the brigade and division combat elements beyond line-of-sight to the range of their direct support artillery where ground-based systems cannot see, and where the risk to manned aircraft is high. Because the RPV must be controlled from a ground location away from the battle area and must be programmed for specified parts of the battlefield, it does not have the responsiveness necessary to support attack helicopter operations or the command necessary to support attack helicopter operations or the command function in the area where the aeroscout will be primarily employed, that is the zone from zero to five kilometers beyond the forward line of troops. In this area, the aeroscout is superior to the RPV in providing a highly mobile platform which will permit the commander to respond immediately to fluid battlefield conditions by rapid movement to a critical point from whence to exercise mission leadership and control in the employment of fire power during day, night and limited visibility conditions.

In summary, there are several systems including AHIP which have the capability to laser designate for Hellfire, Copperhead, and other precision guided munitions as well as provide adjustment for conventional artillery. However, in terms of their overall missions and roles, they are complementary elements of the combined arms team rather than competitive alternatives. In its role as an aeroscout, the AHIP and its target acquisition/designator is an essential and urgently needed capability.

AHIP

Mr. STRATTON. The AHIP is designed primarily to scout and designate targets for the AH-64 with the laser Hellfire missile which can designate targets itself. When the AH-64 program was reduced from 536 to 446, was the AHIP force structure requirement reduced? If not, what is the requirement for 578 AHIP's based on?

ANSWER. The AHIP force structure requirement was not reduced when the AH-64 program was reduced. The AHIP scout with its adverse weather, day/night target acquisition and designation capability is needed to provide critical scout functions for AH-1S units, and to accomplish observation and target designation functions for Field Artillery Aerial Observation units—as well as providing a compatible aeroscout for the AH-64. With the reduction in the AH-64 program, the AHIP distribution was altered to increase the fill of priority AH-1S units. The AHIP in the AH-1S, attack helicopters, but will also designate targets for Copperhead.

Mr. STRATTON. The way the supporting documents are arrayed it appears the unit costs of the Black Hawk are going up despite multiyear procurement. Could you summarize the real cost trend in the program since last year?

ANSWER. The supporting documents do show an increase in the unit cost throughout the years of the multiyear procurement. This is due to the impact of inflation. The real cost during this period is stable and reflects a lower cost than a series of annual programs would have shown due to the efficiencies associated with multiyear procurement.

The real cost trend during the past year has been marked by ups and downs. As you recall the Black Hawk experienced considerable cost growth in the early part of 1981. This was due in large part to changes in estimates from the contractor. The trend since March has actually been down except for a rise in September attributable to a Program Manager decision to return to the philosophy of budgeting to the most likely cost.

Mr. STRATTON. Before we can approve multiyear beginning in fiscal year 1982 for the Black Hawk, we have to receive a reprogramming request. What is the status of that request and where is the $34.9 million going to come from that has to be reprogrammed into the Black Hawk line from outside the program?

ANSWER. The reprogramming request was signed by the Deputy Secretary of Defense on March 2, 1982, and delivered to the Congress on March 3, 1982. The request identifies the Procurement of Ammunition Army account as the source of funds to be provided to the Black Hawk account. The lines within the Ammunition Account which have been identified to provide the transfer are:

	Millions
Nuclear weapon support material (replacement parts not needed in fiscal year 1982)	$5.0
Cartridge 105mm APFSDS-T (86K rds remain in fiscal year 1982, production backlog exists)	13.5
Cartridge 25mm TP-T (641K rds remain in fiscal year 1982, economic order quant)	9.0
Cartridge 25mm APDS-T (899K rds remain in fiscal year 1982, economic order quant)	7.4
Total	34.9

Mr. STRATTON. If I understand your testimony, if the Congress approves multiyear procurement in fiscal year 1982 for the Black Hawk, we can save $147.3 million in fiscal year 1983 with no additional budget authority required by DOD in fiscal year 1982.

What is the deadline on this option to the Congress?

ANSWER. While no additional budget authority will be required by DOD in fiscal year 1982 to execute a fiscal year 1982-84 multiyear procurement, a reprogramming within the Army TOA will be required to comply with OSD policy on multiyear procurement. If the fiscal year 1982-84 multiyear program is approved, $147.3 million will be freed up in the Black Hawk fiscal year 1983 budget request; ($85.6 million for the Black Hawk procurement line and $61.7 million from the Black Hawk advance procurement line). An additional $7.9 million would also become available from the Quick Fix fiscal year 1983 advance procurement line.

There is no absolute deadline on this option; however, it is highly desirable to execute the multiyear procurement as soon as possible. If multiyear procurement request is disapproved subsequent to March 31, 1982, the fiscal year 1982 single year contract may have to be renegotiated with the possibility of pricing increases.

Mr. STRATTON. How much commonality is there between the UH-60A and the Lamps III helicopter—the SH-60B? What are the flow-through cost benefits to the Lamps III program from Black Hawk multiyear procurement?

ANSWER. The Army Should Cost review team has calculated approximately 47 percent commonality by part numbers between Lamps III and Black Hawk. The principal flow-through cost benefit for the Lamps III relates to cost reduction of Sea Hawk fiscal year 1982 materials which are included as a part of the larger materials buy related to the Black Hawk multiyear procurement. Sikorsky has negotiated Lamps Lot II and Lot III options with its vendor base that are related to Black Hawk multiyear Lot VII and Lot VIII respectively. These options expire in December 1982 (Lot II) and December 1983 (Lot III).

Mr. STRATTON. The EH-60A Quick Fix derivative is part of the Black Hawk multiyear package. The request includes $33.3 million in long lead items for the 12 EH-60 aircraft which will not begin delivery until the last quarter of the fiscal year 1985. I assume the airframe items are part of the basic UH-60 multiyear plan so what makes up the $33.3 million long lead request and why it is needed this year instead of next year?

ANSWER. The EH-60A Quick Fix aircraft are included in the 96 aircraft per year Black Hawk multiyear but are budgeted for under line helicopter, Electronic SSN A04300. Long lead funding for engines and airframes is required in fiscal year 1983 in order to provide airframes in early fiscal year 1985. The airframes are required in early fiscal year 1985 to provide time for modification to the EH-60A configuration and to begin integration of mission systems. Three mission configured EH-60A Quick Fix aircraft are scheduled for fielding in the 4th quarter fiscal year 1985. The following is the breakout of fiscal year 1983 long lead funds which support the fiscal year 1983-85 Black Hawk multiyear request.

	Engines	Airframes	Other GFE
Fiscal year 1983 for fiscal year 1984	7.165	14.031	.213
Fiscal year 1983 for fiscal year 1985	3.767	7.909	.....
Fiscal year 1983 for fiscal year 1986	.209	.....	.....
	11.141	21.940	.213
Total	.....	.....	$33.294

Mr. STRATTON. $71.4 million is requested to support an increased flying hour program in fiscal year 1985. Explain how this requirement is derived and what assumptions it is based on.

ANSWER. The Army's flying hour program is increased to 1.78 million hours in fiscal year 1985. This increase is due to:

Increasing number of new avaitors to meet force structure requirements which increase flying hours at the training base.

Larger aviator force requires more flying hours to support readiness.

Additional flying hours for training on new systems entering the active Army inventory (AH-64).

Flying hours to support modernization of the National Guard and Reserves due to receipt of newer and additional aircraft (AH-1S, UH-1).

Army initiatives to increase aviator retention through increased training and resulting job satisfaction.

The increased flying hours equates to $71.4 million of aircraft spares.

Question. I understand this procurement was a last minute addition to the fiscal year 1983 budget and that the buy was originally planned for fiscal year 1984. Does this mean the RC-12D is one of the lower priorities in the Army's fiscal year 1983 aircraft request?

Answer. No, the Improved Guardrail V program still remains one of the Army's highest priority aviation and intelligence programs. It is this high priority that led to the third Improved Guardrail V system being accelerated from fiscal year 1984 to fiscal year 1983.

Mr. STRATTON. The fiscal year 1983 aircraft spares request represents a 116 percent increase from fiscal year 1982—from $223 million to $482 million. The request includes $52.5 million for war reserve spares which was originally planned for procurement in fiscal year 1987. Since a portion of this request applies to the AH-64 which hasn't even been produced yet, wouldn't it be purdent to slow the program

for war reserve spares procurement to insure that we don't wind up buying spare parts only to discover that there are production design changes?

Answer. The fiscal year 1983 aircraft spares request does not include war reserves for the AH-64. The first year for war reserves for the AH-64 is fiscal year 1984.

The entire fiscal year 1983 war reserve request is for aircraft which have already been fielded.

Mr. STRATTON. The committee will stand adjourned until 10 o'clock tomorrow.

Thank you very much.

[Whereupon, at 4:10 p.m. the Procurement and Military Nuclear Systems Subcommittee of the Committee on Armed Services adjourned, to reconvene Wednesday, March 10, 1982, at 10 a.m.]

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U.S. ARMY'S AH-64 HELICOPTER PROGRAM

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Wednesday, March 10, 1982.

The subcommittee met pursuant to notice at 10 a.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mrs. BYRON [presiding]. The subcommittee will come to order.

[Reading the opening statement of Chairman Stratton:] "Today we will take an indepth look at the Army's new attack helicopter program—the AH-64 Apache—which has come under intense criticism in recent months because of a widely reported perception that the cost is out of control.

"We will want to explore the reasons for and the nature of this cost increase, since the Apache was briefed to the subcommittee last year as a program with 'no cost surprises.' Since that hearing, however, the program acquisition unit cost has increased by 49 percent, from $10.9 million to $16.2 million.

"One of the problems is that we have a variety of ways to describe unit cost—flyaway cost, procurement unit cost, and program acquisition cost—and the difference between them is generally not understood either by the Congress or the press. This is especially true since each of those costs can be expressed in 'base-year dollars,' 'current dollars,' or 'then-year dollars.' And these estimates are sensitive to assumptions about inflation, total program quantities, production rates, and independent cost estimates.

"One of the purposes of this hearing will be to get a better understanding of the estimating process in general.

"In the case of the Apache, we have a situation where the Army has been trying since 1964—18 years—to field a replacement for the Cobra attack helicopter. It has already failed once with the Cheyenne and now its latest effort is being seriously questioned.

"We will expect the witnesses today to explain why the Apache is required, why the alternatives are not satisfactory, what has happened to the cost since last year, and what is being done to address the problem.

"Mrs. Holt, do you wish to make a statement or comment on our hearing today?"

Mrs. HOLT. I just want to reinforce what Congresswoman Byron has said. This subcommittee has always been supportive of the Apache program, but we are going to have to take a very careful

look at it because it is being held up to ridicule as an example of a gold-plated system plagued by cost overruns.

I know, Mr. Secretary, you have not been onboard a long time but we still can't go on blaming somebody else for everything. We have to put a stop to it. I just hope that you can assure us today that the program is not gold plated, that the cost is not out of control and that there is, in fact, some relationship between budget estimates and program costs that you can explain. If you can't explain it then we are in real trouble.

Mrs. BYRON. Our witnesses today are the Honorable James R. Ambrose, Under Secretary of the Army; Gen. Glenn K. Otis, commanding general, U.S. Army Training and Doctrine Command, Department of the Army; and Maj. Gen. Edward M. Browne, program manager, AH-64 helicopter program, U.S. Army Aviation Research and Development Command, St. Louis, Mo.

STATEMENT OF HON. JAMES R. AMBROSE, UNDER SECRETARY OF THE ARMY

Mr. AMBROSE. Good morning, Mrs. Byron and Mrs. Holt. We, certainly, appreciate the opportunity to address the subcommittee.

We don't enjoy any more than anybody else seeing these increases, nor do we enjoy misrepresentations about them. So, what I would like to do today, with the help of the others who are with me, is to explain as accurately and completely as I can where these costs came from, the cost increases, and what we are trying to do about it.

I would like to get right to the cost part of it but would ask, once I have completed that, that General Otis in particular, go back over the requirements which I consider, as does the rest of the Army, very urgent to have such a weapon system as this.

A month or so ago in front of the committee on the other side, I gave substantially the same basic account as I will give today. At that time I had to say that we were pretty far apart, ourselves and the prime contractor, and that we weren't going to let this contract at all unless we could get it for the money that we were prepared to spend, and get it within that money on a contractual basis that provided us with a strong assurance that, in fact, the cost would be held.

There is no use in getting some kind of arbitrary cost result and then having to show up again in 6 months or 1 year and say, Well, we didn't make it; we need some more money. I don't intend to have any part of that sort of thing. So, we have had to do a lot of work which I will describe to you in detail, as a matter of fact in awesome detail in my opinion, more than should be necessary; but we did it so as to be sure that our costing was completely rational, defensible, doable by well-managed, competitive organizations.

With that kind of preamble, I am pleased to report that as a result of the past month's intensive work—and it is intensive in the sense that something of the order of 170 Government personnel have been engaged in this, many of them working 7 days a week—I, myself, went to St. Louis and spent 3 days with General Browne and his troops 1 week ago—that we are close in our opinion to being able to enter into this contract within the budget dollars that

we had previously set as being reasonable and affordable for this program.

There will be a negotiation still to come in the next 2 to 3 weeks, but I think we can make it; we are close enough that in, our opinion, it is a rational contract for both the contractor and ourselves to then enter into and get on with this urgently needed program.

Beyond that, although in the succeeding years we are dealing with estimates, we fully believe that we can get this contract performed for the 446 aircraft that we now are talking about buying, planning to buy, within the program manager's budget.

As you will see a little bit later on, the Army—and, I think, reasonably—has put on top of the program manager's budget a reserve, if you will, or an added amount, that protects us from further overruns. The significance of what I am saying is that we don't think that we are going to need that money for the purpose of the 446 helicopters. We had previously told the program manager though that we would not take the money away from him because we urgently need as many of these as we can afford to get; so the prospects at this point are that we will be able to buy over the period of this program more than the 446. That is an estimate at this point. I do not want to go beyond that, but it is a conscious estimate made on the same basis as we have previously made the other estimates. I think it is legitimate and it is encouraging.

Now, I would like to spend a few minutes, if it is your pleasure, to go through certain parts of the statement that I have previously submitted to the committee in explanation of what happened, as best I have been able to put it together from all of the sources. I have not spent a lot of time going back in the history very far, because I was much more concerned to protect the future and to accomplish what we need to now.

Essentially, if you will refer to table 1, called Program Cost Estimates, this tells you where we have stood at various times in the last year or so. I acknowledge, as you say, Mrs. Byron, that there are all of these various costs, ways of asserting and reckoning costs. We have tried to display a certain number of them and track them through this, but it is a rather awesome task to try to follow past accounting treatment that the Congress and the Defense Department and the Army have gone through over many years, including the economic calculations going back into past times.

The important thing, I believe, shown on table 1, is that a year or so ago, if we look at the second line—and the reason I say the second line is that the first line is more or less sunk cost at this point and it is nearly the same over the whole chart—the procurement account is what varies and at that time up through September of last year the procurement of 536 aircraft was forecast to cost $4.8 billion, and that is in escalated dollars for the particular years of the program.

In October, in a formal way, the program manager showed up and said it was going to cost $5.9 billion.

In November, at a formal ASARC—and I will go back and trace the evolution of that a little bit more—a formal Army meeting in November called the ASARC said that while the history of these programs is uniformly not very good and we don't believe that it is at all likely or very likely that that cost will be held, so we esti-

mate. This was the Army Comptroller and various others doing so-called independent cost estimates saying that we would be safer to estimate the cost at $6.5 billion.

The program manager was then asked to see what he could do to get the costs back in line. He was given an assignment to get it in line, given the added reserve of $0.5 billion or so to achieve a $5.8 billion number, which is shown in the next to the last column, even though he had to reduce the number of aircraft to do that.

We finally settled in November, on a program budget for the total program including the next 5 years of actual budgeting, of $5.86 billion. We will see this on another chart.

At the same time the program manager was saying, and is still saying today, he could do the job for $5.3 billion.

At the end of December of last year, the contractors showed up—actually the prime contractor. We had most of the other information earlier. But the total program based on contractor submissions came in at nearly $6 billion. At that point we said, "That simply won't do. We are not going to spend that kind of money. Go back and figure out how to do what we want for $5.3 billion."

I will come back to those numbers on a subsequent chart, but if you will go down to the bottom of this page, then you will see those procurement dollars and in certain cases added development dollars as well, translated into unit cost, depending on whether you are talking about just flying the airplane away or flying the airplane away with a full set of spares and things of that sort, or the total number of airplanes divided by the total amount of money spent on the program.

I think those are close enough to the actual accounting definitions for the purpose but, of course, there is more detail behind it.

You see that what has happened, taking the very bottom line, is that a year ago the Army was saying this thing was going to cost $10.9 million apiece, in average program acquisition cost, and now it is $15.6 million. That reflects, among other things, the reduction in the number from 536 to 446.

As a parenthetical remark, I might tell you that when I first came into the Pentagon sometime in August or September as a consultant last year, I was attracted, as you might suppose, to the $0.5 million tank. I got pretty confused learning my way through the jungle at that point and all the numbers that I have been referring to, and I asked the Army Comptroller, General Peixotto, to make a complete audit trail of every number.

It resulted in a package about this thick (indicating). You are welcome to have a copy if you want as a kind of tutorial on these costings in general or on the tank as a separate subject. I have not done that with this helicopter. I don't think the trail is quite as complicated but if there should be any necessity for it we will certainly do it again and provide you with every trace that exists of contract occurrence, congressional action, OSD budgeting, Army budgeting, or whatever it may take.

You will find, as you have already indicated, that it is in fact a confusing business and there are all kinds of numbers. I don't know any way to get rid of the whole set.

Now, if we could go over to table 2, table 2 is in capsule form an attempt to show you enough of the history of this thing to then give rise to the kinds of questions that we all have.

This chart, which refers to the manufacturing labor hours to build these aircraft—and these hours are average hours over all the aircraft. This is not the whole story, but it is the thing that has probably gotten the most out of hand, at least in recent times. You see that for several years, going back to the 1976 period and on up through 1978, and, indeed until the spring of 1981, both the Government and the prime contractor didn't change their estimates at all, or almost not at all, and they had the same relation. The Government was a little higher than the contractor.

In May 1981 the Government people and the contractor both showed up with a "should cost" estimate that was double what they had been saying, or more than double in the case of the contractor's changes. That is where the problem started.

Now, that is not a good story and I am not going to wash over it. The basic reason, I think, when you cut through all of the details, is that until May 1981 neither side had really faced up to the totality of the cost of this aircraft in a thorough enough way that the estimates could be traced back to real drawings, a real parts counts, real tooling lists and so forth. In other words, they were living in a kind of dream world, if you will. Now, there is no excuse for that, in my book, but it is history I can't get back.

Sometime in this period more was known that should, if we had been operating more tightly, have given rise to clues that this was going on.

The reporting under the contracts, the way these contracts have been operating, is, in my opinion, too slow, too much after the fact. We are going to change that. We are going to call for interim reports and we are going to have audits at earlier times to see to it that we are getting at the whole story.

One aspect of this that you will hear about a little more from me in a few minutes is that the number of wires, which is an indication of the electrical complexity of the machine and its electrical cost, quadrupled in this time period.

Mrs. BYRON. Mr. Chairman, may I ask a question at this point? On table No. 1, in December 1981, you had a fairly high differential between Hughes and the Government. In January 1982 that gap had been closed somewhat. We are now almost mid-March. Has there been a change in that curve in a downward trend?

Mr. AMBROSE. Yes; it has gone down. The Government numbers have gone up a little bit.

General Browne, can you say what the number is roughly today on the contractor's sites?

General BROWNE. The number today is indicated by the revision 3 line on the right, and is 19431, as we go into the negotiations which start this morning.

We have reason to believe over the past month, as the Secretary has told you, that that additional factfinding as recent as this past week, that as we enter negotiations there will be further accommodation toward what we consider to be a rational number of hours for manufacturing labor.

Mr. AMBROSE. What we are showing, incidentally, is the Government's tightest should-cost estimate. There is a range. These things are not that accurate. We don't want to disclose the upside.

Mrs. BYRON. You had an increase and then you were beginning to show from December to January a decrease in the differential?

Mr. AMBROSE. Yes. It is getting better. It will be close enough, in our opinion, by the end of the month that we can get into the contract within budget.

To complete the comments I was making, it was bad enough that the should-cost doubled in the May time period, but in December the same contractor turned up with a proposal to do the work at 50 percent more than he had said in May it would take to do the very same thing, and nothing had changed. That is just unacceptable.

That gave rise to the problem. The position that we took which was that we just weren't going to get into such a contract.

Now, the only difference between the December and January is that we changed the quantity, so there is some decrease because we are building fewer, offset to an extent by increased cost of making fewer.

The basic situation is what I have said. Both the Government and the contractor let it go too long.

Good morning, Mr. Chairman. I will repeat briefly what I have been saying.

Table 2 shows the Government and the contractor for some years had a relatively low estimate of the cost expressed as manufacturing hours per aircraft, averaged over all the aircraft, and then all of a sudden last May or so they both showed up with costs that were double or more what they had been saying.

As best I can tell, the reason for it is that they put off too long facing the reality of the design as it has been for some years or long enough time that we should have know at an earlier time. In this time period not that much had happened in actually changing the content or the design.

That was bad enough, but then in December the contractor showed up with a proposal that was 50 percent higher than what he had said just 5 months before was his best estimate of what it would take to do the job.

From that point we have been at each other pretty heavily now for several months and in particular quite intensively in the last few weeks to narrow this gap. The Government position that is shown is its tightest minimum position. There is a range above that that is reasonable which we don't choose to disclose on this chart for negotiating reasons, but we expect now within the next two or three weeks to have brought the gap down to a narrow enough——

Mrs. HOLT. Mr. Chairman, may I ask a question at this point? I hate to interrupt you.

Mr. AMBROSE. That is quite all right.

Mrs. HOLT. Can we discuss how much it would add if we continue with the 536? What is the tradeoff there? We are losing some cost effectiveness by reducing the numbers. Can you give us that?

Mr. AMBROSE. I think you are looking at something on the order of $0.5 billion added at this point.

Now, as I said in my introductory comments, we believe that we are able to enter into this contract and control the production well enough over the next few years that for the program manager's dollars we can get the 446 aircraft; that is, for $5.3 billion.

For the amount that the Army is prepared to spend on this program, which is $5.8 billion, both General Browne and I believe that we can get a considerably larger number of aircraft, roughly in the order of 500 or 510, something of that sort, that we will actually be able to bring that many aircraft in for the $5.8 billion. It is an estimate but these things have all been estimates once you get past this year.

Mr. STRATTON (presiding). I am sorry I was late this morning, so I am not up to speed on what you have said, but why is it we get ourselves in a bind like this? What kind of contract did you give Hughes in the first place?

Mr. AMBROSE. The contracts for the development were cost-plus contracts, were they not, General Browne?

General BROWNE. Cost-plus incentive.

Mr. STRATTON. We had somebody from the Army who testified with regard to the Black Hawk. They said the mistake that we made was that we didn't get a fixed-price contract. We gave them a cost-plus contract. If you have one person confessing yesterday, how is it we were able to get into this bind again after we had all this business about overruns? We have had the example of the C-5A. Why is it that we get into this sort of thing? Is nobody willing to build helicopters unless they can get this kind of arrangement?

Mr. AMBROSE. I guess I don't know the answer to that. I personally think a cost-plus incentive-type contract is the appropriate contractual vehicle when the program is in the stage of trying to evolve a design.

Mr. STRATTON. You did not have anything to do with awarding the contract; this was before your watch; is that right?

Mr. AMBROSE. Yes.

Mr. STRATTON. Don't you have any control over changing the contract?

Mr. AMBROSE. We propose to go into fixed-price incentive contracts from this point on.

Mr. STRATTON. How is it that we are able to allow this kind of thing to happen between November 1979, and September 1981, that the Hughes price goes up so astronomically? Who is on the job here? What do we hire inspectors for? Who is tending the store? Has nobody bothered to find out what Hughes is doing so that we know before the thing gets up here to this astronomical figure of December 1981, that they are overrunning?

Mr. AMBROSE. I can't answer the historical part, but I can say, as I did before you came in, that I believe the problem was not the form of the contract so much as it was not facing up to what was going on and requiring an earlier account.

Mr. STRATTON. I don't understand what you mean by "facing up to what is going on." I thought when you have a contract with somebody there is supposed to be some device, the SAR, that tells you exactly what the price status is from time to time; is that correct? We had a panel in this committee, that Mr. McCurdy chaired

last year, looking into these matters. He indicated that the SAR material is never up to date; it gives you the price 6 months ago.

Mr. AMBROSE. Or 2 years ago.

Mr. STRATTON. Why haven't we got enough intelligence in the Defense Department to be able to get people who can find out in real time what the cost of some particular program is? What is the point of putting some general in charge of this particular program and saying, "You are manager" and he never bothers to find out what the cost is until it is too late to do anything about it?

Mr. AMBROSE. I think that is the speech that I have made, too. I see no reason whatever why we can't get at these things at an earlier time. I have a reporting system coming in to me now where the facts are correct as reported on a monthly basis—and this information has been around all along, apparently—on a monthly basis, not 2 years later, not 6 months later. I will know when these things are going downhill.

I can't tell you why this wasn't done before, because I wasn't here, but I can tell you it is not going to be done this way while I am around, because I am not used to this sort of thing.

There is a certain amount of difficulty, though, even so in getting good numbers. Notice that from 1979 to 1981 both the Government and the contractor doubled or more their numbers; so it was not a matter of the contractor alone not coming out with the right numbers. Both sides were waiting until the end of a development contract when there was a formal requirement for a submission of the design to unit cost estimate to add it all up.

Clearly, this thing did not all take place overnight; it was accumulating as the design evolved. The way these contracts were being run, they just simply did not add the score up.

Now, we are going to change that and we are going to have interim reports so that we see what has happened from quarter to quarter, which is probably the right frequency for this sort of thing.

There is the difficulty of getting accurate estimates if you don't have the design completed and you don't have the papers; but I do believe that we can get much better estimates and much closer to where the thing really stands than this sort of past track record indicates, and we are going to do quite a bit to change it.

WRITTEN STATEMENT OF HON. JAMES R. AMBROSE

Mr. Chairman and distinguished members: I am here at your request to discuss the current situation on the AH-64 attack helicopter program.

It is my desire and intention to discuss the AH-64 program, and any other Army programs, with the Congress, in complete candor.

I have been in office not quite 5 months. In that time, I doubt that I have been able to learn as much as you already know about the design, performance, and requirements for this weapon system. But I have satisfied myself in the intensive reviews which have taken place in recent months that the need is real and the performance will meet the specifications.

There is a serious cost problem. I'll get into that immediately.

General Browne, whom you know very well, is here with me. He will contribute his knowledge and comments as needed.

The bottom line at this moment is that there have been very serious increases in the program cost estimate; and there is disagreement with the prime contactor over the reasonableness of portions of his proposed costs. While we have made significant progress, we are not going to enter into a contract for the production of this helicopter until we satisfactorily resolve this disagreement, and find a way to limit the pro-

gram cost to an amount we can afford and which is reasoanble to pay for this capability.

Having said that, I would like to give you a relatively brief exposition of the recent cost estimating history and the causal factors; describe some of the major differences which give rise to the disagreement; and tell you about some of the steps we are taking to stop this cost growth, and to insure that the program cost will stay put during the production phase.

I have not gone back too far in history. I though my effort was better spent trying to resolve today's problems and get the lid on tomorrow's performance But I have to say that I suspect the past history of this program unfortunately resembles that of a number of other major programs. It almost seems to be an institutional phenomenon that these projects start with gross underestimates by both government and contractor, usually followed by modest growth in estimates during the early development phases, and then experiencing sharp increases toward the end of development and in the early production phases. If it is appropriate later on, I'll make some comments on what we are trying to do about the general situation.

Some of the information that we might want to discuss this morning would be sensitive relative to the on-going negotiation. I assume that the committee can go into closed session at the appropriate time to protect the government position, if that situation should arise.

TABLE 1

AH-64 PROGRAM COST ESTIMATES

(ESCALATED $'s IN MILLIONS)

	SAR MAR 81	SAR SEP 81	PM BCE OCT 81 536 A/C	ASARC NOV 81 536 A/C	PM EST NOV 81 446 A/C	ASARC * NOV 81 446 A/C	PM EST BASED ON CONTRACTOR PROPOSALS
DEVELOPMENT	1138	1139	1233	1233	1233	1233	1233
PROCUREMENT	4821	4821	5955	6518	5336	5864	5994
PROGRAM TOTAL	5958	5960	7188	7751	6569	7097	7227
Δ FROM MAR SAR	–	2	1230	1793	611	1139	1269
UNIT FLYAWAY COST	7.3	7.3	8.7	9.7	9.0	10.2	10.5
UNIT PROCUREMENT COST	9.0	9.0	11.1	12.2	12.0	13.1	13.4
UNIT PROG. ACQ. COST	10.9	10.9	13.2	14.2	14.4	15.6	15.9

* SAR DEC 81

DEVELOPMENT	1231	UNIT FLYAWAY COST	10.7
PROCUREMENT	6193	UNIT PROCUREMENT COST	13.8
PROGRAM TOTAL	7391	UNIT PROG. ACQ. COST	16.3

First, let me display the program cost changes that have occurred since the SAR report of March, 1981. Table 1 gives you the total program costs in escalated dollars reported in the March and September SAR's.

Also on this table are the program cost estimates presented to us in October 1981 by the program manager, the program cost estimate approved by the November ASARC, and a cost estimate which is derived by extrapolating from the contractors' proposals through the production years.

The procurement costs and the total program costs in December SAR are noted at the bottom of Table 1. The increase of $286 million from the Nov 81 ASARC column is the application of subsequent inflation indices.

Before I go to a simplified graph which I believe gets to the root of the problem, the points to note are:

1. From March to October the procurement program cost increased $1134 million.
2. During its examination of the program in October through November the Army felt it was prudent to increase the program cost estimate by $563 million, because of the cost history that had been exhibited.
3. To help contain the cost growth, the Army then reduced its quantity requirements from 536 to 446, an action I will explain later; and revised the production

schedule to produce more economically. The effect of these changes is contained in the program cost estimate approved by the November ASARC, which reduced the procurement program cost by $654 million. This is still higher than the March SAR for the larger quantity by $1043 million.

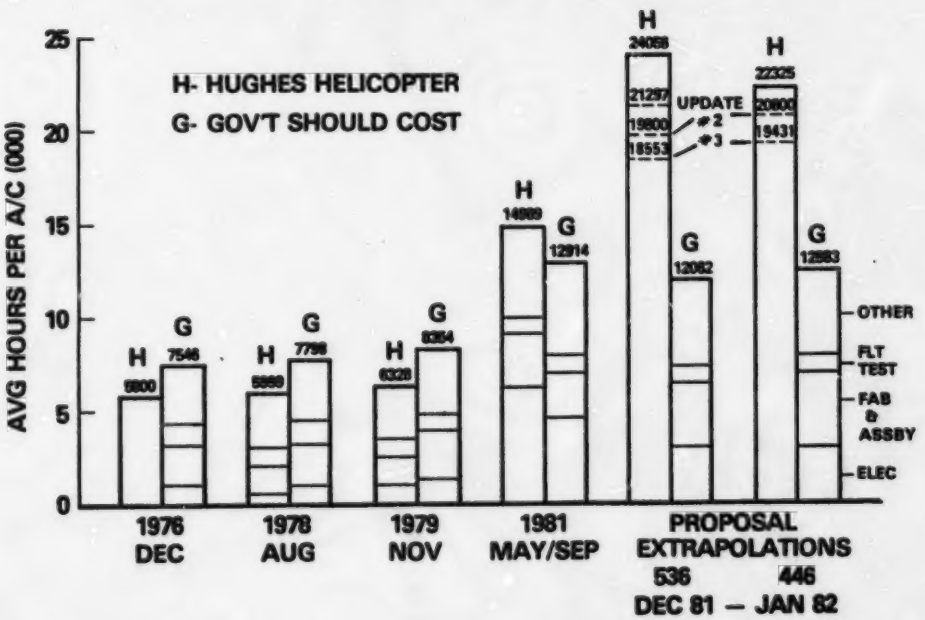
4. The prime contractor submitted his proposal for fiscal year 1982 for 11 helicopters and long lead items for the revised production program on December 31. The estimated program cost, including this proposal before any negotiation, was $6.36 billion.

5. Negotiations to 4 February reduced this estimated program cost to $5.99 billion, which was $658 million higher than the program manager's November 1981 estimate of $5336 million. The ASARC added $528 million to the program manager's estimate to accommodate the most likely cost for 446 aircraft. Since 4 February, fact finding caused another $37 million reduction in fiscal year 1982 which will have a corresponding decrease in the $5.99 billion.

I hope that I have not given you too many cost estimates, but I think it is necessary to understand the sequence of events and to be sure that we are using the same reference points when we talk about cost growth.

TABLE 2

HHI/GOVT DTC — SHOULD COST
536→446 UNITS
MANUFACTURING LABOR HOUR COMPARISON



Now I would like to go to Table 2. In this simplified chart, I've tried to show what has gone on. On this chart are shown both government and contractor design-to-unit-cost labor estimates. You can readily see the phenomenon I mentioned earlier. For several years both government and contractor estimates were stable and far below today's estimates. Then last year they both doubled, approximately. I'll get into the explanations for that in a moment. This was bad enough, but the , when the contractor's proposal came in in December, there was another sharp increase, this time not accompanied by an equivalent increase in the government estimate. While there has been significant movement downward in fact finding and negotiation, we still have unresolved differences.

TABLE 3
TOTAL PROGRAM COMPARISON
BY
MAJOR CONTRACTORS

	SAR MAR 81	PM 536 OCT 81	ASARC 536 NOV 81	ASARC 446 NOV 81	DELTA FROM MAR SAR	REMARKS
HUGHES	2730	3684	3684	3322	+592	HARDWARE INCREASES IN BASE LABOR AND MATERIAL; INCREASED LABOR IN SYSTEM PROJECT MANAGEMENT;* INCREASED TOOLING, TRAINING HARDWARE AND NONRECURRING TESTING.
MARTIN MARIETTA	762	957	957	874	+112	INCREASES IN GSE(ATE), HARDWARE, SYSTEM PROJECT MANAGEMENT;** AND TOOLING.
GENERAL ELECTRIC	920	922	922	809	−111	INCREASES BASED ON BLACK HAWK SIXTH YEAR COST PROPOSALS, OFFSET BY QUANTITY DECREASE OF TOTAL ENGINES (1072 vs. 892).
GOVERNMENT	409	392	392	331	− 78	FEWER ASE/KITS FOR REDUCED AIRCRAFT QUANTITY, AND LESS COMMAND SUPPORT DUE TO SHORTENED PRODUCTION BUYOUT.
PROVISIONS FOR MOST LIKELY COST	—	—	563	528	+528	
TOTAL	4821	5955	6518	5864	+1043	

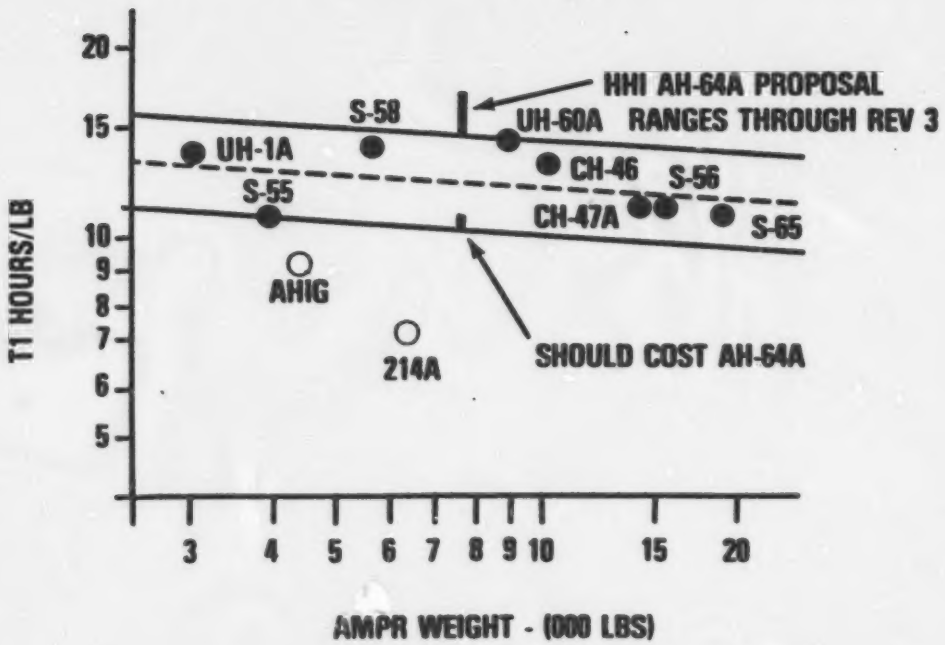
* SYSTEM PROGRAM MANAGEMENT INCLUDES PROGRAM MGMT, ILS MGMT, PROJECT ENGINEERING SUPPORT, AND COMPUTER RESOURCES.

** MARTIN MARIETTA SYS PROGRAM MANAGEMENT GROWTH REFLECTS CONTRACT NEGOTIATIONS WHICH FULLY DEFINED PROJECT MANAGEMENT, RAM, AND ILS SUPPORT REQUIREMENTS.

Table 3 shows the principal items which have caused the increase from the March SAR. I have taken it step-by-step through the program manager's estimate in March and October, the effect of quantity reduction, and the ASARC provision for "most likely" cost added to the program manager's estimate. I will discuss any of these at greater length that you may wish.

TABLE 4

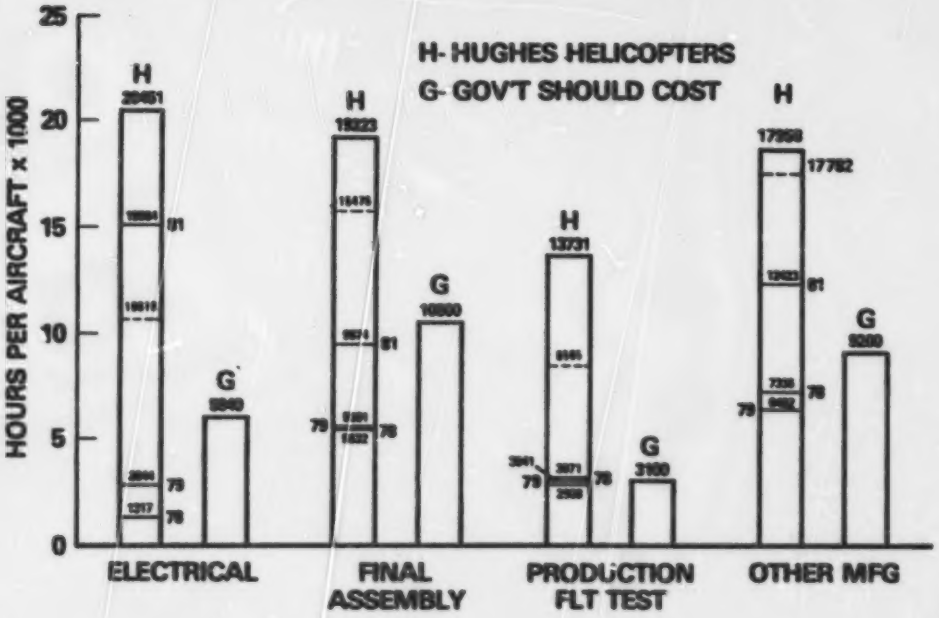
HELICOPTER COMPARISON
T_1 (HRS/LB) vs AMPR WT



To show you some of the magnitude of the disagreement we are trying to resolve, I have prepared two charts. The first, Table 4, compares the AH-64 proposal and should-cost estimate for bare airframe according to a standard industry definition with equivalent costs for other helicopters. Initially the proposal was quite high. This can't be considered an exact difference, however, because there are many other variables. But it was out of line. There has been positive movement toward a more likely value.

TABLE 5

HHI/SHOULD COST, 11 A/C MANUFACTURING LABOR HOUR COMPARISON



The second, Table 5, compares the contractor original proposal and where he is today with government should-cost for manufacturing categories. The government should-cost estimate may be somewhat on the low side reflecting insufficent input from the contractor on which to make a judgment. Nevertheless, there was just too great a difference to accept the original proposal. A lot more work had to be done. Since then there has been movement on the part of HHI as shown in the revised figures. Just this past weekend we have had additional movement. On our part, there has been some upward movements in the should cost positions, as the final results of fact finding have been incorporated. I have not included those movements on this chart in order that the government negotiating position not be compromised. However, the difference between the Army's should cost and the contractor's positions has closed significantly. We are moving toward identifying a fair price for the AH-64 which will support a DSARC and production awards by 15 April 1982.

Finally, we have an audit report from DCAA which indicates the contractor's submission is unacceptable. We will not enter into a contract until this has been cleared up.

Now faced with this situation, we have done the following things:

1. We have intensively reinvestigated the requirement for this system and conclude that we must have it on the battlefield. I think you know, without going into classified matters, why that is so. We also believe it is cost effective even at substantially higher costs than were used in the original COEA. (But we are not going to rationalize the present costs away on that basis).

TABLE 6
AAH DISTRIBUTION PLANS

	108	108
	54	54
	54	54
	18	18
	72	72
	18	18
	36	36
	18	18
	18	0
	18	0
	18	0
	18	0
TOTAL	450	378
TDA	26	26
FLOAT	60	42
PROCUREMENT OBJECTIVE	536	446

2. We have equally intensively gone into the quantities required. Reluctantly, we have reduced the quantity by deleting the lower priority planned assignments. Table 6 shows what changes were accepted by the Deputy Chief of Staff for Operations and Plans and USA Training and Doctrine Command. These reductions are real. They hurt. But we will do it. If the program manager and the contractor can find ways to get more helicopters for the money we give them, we'll welcome that and let them do it. But no more money.

3. We have put off the DSARC until we have assured ourselves that we have an executable program at a fair price. Meanwhile, we have funded continuing efforts to protect deliveries and to retain the advantageous provisions of previously negotiated Fixed Price Contract options.

4. The TADS/PNVS contract will contain very innovative terms benefiting the government. In effect, they will cap the recurring cost of the entire production buy. There will be a sharp profit hit to the contractor if he falls short, and a fair chance to make more profit if he does better than estimated.

5. I've described the intensive negotiation with the prime contractor. I have met with the president of this firm. I gave him substantially the same account and viewpoint I have given you today. I have assured him of the Army determination to bound and rectify the cost problems we see. I've asked him to consider placing a cap on future years production. I've invited him to bend every effort to get these cost issues resolved. The result of these efforts, coupled with the continuing program manager's activities, has been a reduction of $56.5 million in the FY 82 proposal costs.

Fact finding is complete and formal negotiations have commenced.

6. We are examining every available action of breakout, competitive sourcing, production process changes, and more efficient tooling. There have already been well over 300 producibility improvement changes introduced in such things as forgings and castings. One of the big problem areas has been growth in the number and unit cost of electrical wires. We are particularly looking at ways to produce these wires at lower cost.

7. The contractor has provided an added inefficiency cost factor for start up in the new facility at Mesa, Arizona. We believe that there will be less of a problem there than retention of the program at Culver City. The indications to date also are that he will achieve significantly lower labor rates at Mesa than he used in his proposal.

I hope in this statement I have provided you with reasonable insight into today's situation on this program, our determination to get the situation under control, and the actions that are going on to accomplish this. I will be pleased to respond to any questions or comments you may have.

Mr. STRATTON. Mr. Mavroules.

Mr. MAVROULES. Thank you, Mr. Chairman.

You have a committee before you that is trying to be helpful, as you have learned since you have been on the scene this short period of time. Am I correct in stating this program goes back to 1972?

Mr. AMBROSE. Yes.

Mr. MAVROULES. Could it be a fact that perhaps we were using low numbers back in 1976 and 1977 to acquire contracts? Was there any possibility of that being done at that time?

General BROWNE. I would like to address that and a couple of the other comments.

With respect to 1972, the design to unit production cost technique was established then to set what the Army thought was a rational price for what we wanted in terms of capability. That was then sent into the SAR back then and it has continued on as the base year against which we are measured for evermore.

Subsequent to that point in time we have made rather dramatic changes to this helicopter and some of its equipment. As you may recall, the TOW was the system for this airplane back at that point in time. In 1975 and 1976 we elected to change out the TOW and the TOW sight for the Hellfire missile system, target acquisition designation site, and sophisticated pilot night-vision system. The baseline still remains the same. This, in my estimation, tends to skew some of the results.

In the effort to then develop and integrate these new systems, we processed in the development process to evolve that design.

Now, I may, if the Secretary will forgive me, take a bit of issue——

Mr. AMBROSE. He is forgiven.

General BROWNE [continuing]. In terms of the accounting process here. I think the chairman hit it right on the head. What is the matter with the cost estimating process? All during development, Mr. Stratton, what you are getting from the contractor, and normally from the program office, is the cost of the development; in other words, the evolution of the design, itself.

Now, this program has over the 5-year period, as you can see depicted by this chart, run specific design to cost reviews with the contractor. Now, why didn't we pick that up in terms of this November to May/September earlier? The point is that we were still evolving the design. When we got drawings that most represented

what we were getting ready to go produce, you get them just about the time you are attempting to transition into production, so you have not had the benefit of these finalized drawings to the extent you would like.

You may recall in 1979 when we were here we had a significant flight problem with this airplane, where we had to redesign the whole tail.

Mr. MAVROULES. If I may interrupt, because that is the kind of thing we want to hear, what percentage of increase can we attribute directly to your part of the service? In other words, you are trying to improve an item, the cost perhaps running quite high. I think that is a fact. Of that increase, what percentage can we attribute to you? Let us forget the company for the moment. What percentage can we attribute to the Army for making changes?

I have the same questions of Navy and other departments. Can you give me that answer so that we can have a firm evaluation of what is going on?

Mr. AMBROSE. The general can speak for himself, but let me try because I asked the same question. I said, "Get me away from all this bookkeeping, inflation, and let us see if we can understand what really happened in some constant frame of reference."

The answer General Browne gave me—if I recall the numbers correctly and he is free to correct me and say anything he wants—was that we started out in some then-year dollars for a helicopter that cost about $1.6 million; that in the same frame of reference would now cost $3 million. Of the difference, which is roughly $1.5 million, $0.5 million is changes that the Army put into the thing that are beneficial, half a million of it is wrestling with problems, screwups, poor estimates, that sort of thing, and the rest of it is changes in the accounting methodologies as to what is included in the total that I gave you.

So, it is actually not a bad track record in that sense.

Mr. MAVROULES. That is a very candid answer and I appreciate it.

Now, are you saying to me perhaps if that is correct, in fact, that the $1.6 million was a low figure at the beginning?

General BROWNE. No, sir.

Mr. MAVROULES. If you are having new accounting procedures——

Mr. AMBROSE. If you turn those numbers through the economics crank to the present time, you will get the numbers that we are using here. The problem I have, personally, with that use of economics is that in my book economics itself is a cost to be managed and contained, not just a factor to be tacked on after you have everything else taken care of.

Mr. MAVROULES. Thank you very much.

Mrs. BYRON. Let me take that one step farther: Since we don't have a production contract yet and now inflation and these costs are being added and changed every time a new set of figures are put on, how does the Army expect us to accept these tentative numbers when on any other system we look at the real cost growths do not come along until you are in production?

Mr. AMBROSE. I think that the answer here is that this particular program has been run with enough front-end money, the produc-

tion kind, tooling, tooling designs, parts listings, and productization, if you will, that things that have shown up in other programs I have looked at that reflect the absence of that sort of thing should not be here.

We think we are able to release at this point something like 95 percent of all the finished drawings without, as we call it, red lines, that is, not marked up with engineering changes. That is a very key thing because I think a lot of what you see after the fact, once production starts, reflects the production people trying to catch up with the engineers that was not taken into account before that. I believe that is part of the Black Hawk story, for example.

Mrs. BYRON. We looked at that chart, table No. 2, that you had on production hours. That is one area where, once we get into production, we can get into a lot of trouble on unless those are finely tuned and nailed down.

Mr. AMBROSE. You are absolutely right. This is an area where there is a very great deal of work done by the Government side and by the contractor, too. The work results in standard hours first; that is, the number of hours in an ideal way after you have built 1,000 of these things you ought to be able to build it for.

There is quite close agreement between the Government and the contractor now on those numbers. There was not when these charts were prepared.

To those standard hours is added what I call an offstandard performance factor which varies with the quantity of aircraft you have built. In most cases this is, at the early part of the work, a factor like six or eight times; in other words, when you first build 10 of these things it takes you eight times as long as after you have built 1,000 of them. Those are reasonable industry performance factors.

We have checked those with Teledyne Ryan, Bell, Sikorsky, Boeing, and we believe they are in the right ballpark of performance numbers. That does not say some one contractor can't do worse.

We intend to sit on them and keep them from doing worse.

Mrs. BYRON. Mr. Chairman, I make a motion that the chairman be authorized to go into executive session for 1 subsequent day for the purpose of receiving national security information.

Mr. STRATTON. The clerk will call the role on the motion of the gentlewoman from Massachusetts.

Mr. WHITE. Mr. Stratton.

Mr. STRATTON. Aye.

Mr. WHITE. Mrs. Holt.

Mrs. HOLT. Aye.

Mr. WHITE. Mrs. Byron.

Mrs. BYRON. Aye.

Mr. WHITE. Mr. Hillis.

Mr. HILLIS. Aye.

Mr. WHITE. Mr. Mavroules.

Mr. MAVROULES. Aye.

Mr. WHITE. Mr. Badham.

Mr. BADHAM. Aye.

Mr. WHITE. Mr. Leath.

Mr. LEATH. Aye.

Mr. WHITE. Mr. McCurdy.
[No response.]
Mr. WHITE. Mr. Kramer.
[No response.]
Mr. WHITE. Mr. Hertel.
[No response.]
Mr. WHITE. Mr. Hunter.
[No response.]
Mr. WHITE. Mr. Price.
[No response.]
Mr. WHITE. Mr. Bennett.
[No response.]
Mr. WHITE. Mr. Chairman, on that vote there are eight ayes and no nays.

Mr. STRATTON. The motion is carried and the Chair will exercise that authority at the proper time.

General Browne, let me come back to your remarks. If I understood them, what you said is that the reason that things got out of hand between November 1979 and September 1981 was that you had added a lot of changes as a result of your research and development process and those helped to create the added expense; is that correct?

General BROWNE. That is correct, sir, but that is not the only piece of that.

If you take the company that is getting prepared to build——

Mr. STRATTON. Let me just try to stay with this because I think this is one of the things we have tried to pinpoint.

It seems as though when we build something we keep changing it. Day after day we put something more in. This apparently was the argument between Admiral Rickover and the contractor who eventually succeeded in getting him bounced out, that there were too many change orders, and it was too costly, and we had big arguments as to who should pay for the changes and all the rest.

It seems to me that what we need to do is put an end to that kind of thing. Let us settle on some particular design that is going to work and then produce it. I think that is the difference, as far as I can find, between the Soviets and ourselves.

We want to put that extra 1 percent or 5 percent of additional capability in, and as a result we delay the whole process interminably and raise the cost, as we have done in the case of the M-1 tank and as we have done in many other things. It is better to get the darned thing out in the field so that we have the numbers and maybe we can improve on it the next time around.

Isn't this something, Mr. Secretary, that ought to be cranked into the consolidated guidance or whatever it is you give to the gentlemen in uniform under you?

Mr. AMBROSE. I can only say amen, Mr. Chairman. Of course, you have to change something that doesn't work, but there should not be very much of that. The changes for the sake of deliberate improvements should be scheduled in what we call block improvement programs and introduced someplace down the line after the production has settled down at one point. The running changes, creeping up a little bit as you go, are just a curse on controlling any program.

Mr. STRATTON. I have a couple of questions here I would like to ask:

Yesterday we had a presentation on the AHIP, which is another one of these dream helicopters. The colonel who was presenting it seemed to be heartbroken when we suggested that perhaps we ought to halt a little bit and see whether we wanted to go into production right away.

General Browne says that this thing has been in R. & D. for 5 years and yet you are adding so many changes that the cost went up at an enormous rate in 1981, and that is part of our problem.

The AHIP has only been in R. & D. for 4 months and the Army wants to put it into production. If you had AHIP in R. & D. for only 4 months, think of the changes that are going to be made in the production process and the cost involved when you see what an enormous amount of increase we had after 5 years of R. & D.

I am more persuaded than I was yesterday that we ought to hold up on this AHIP until we know a little bit about what is actually going to be involved and what the problems are, rather than to pay for all our mistakes as we go along.

Mr. AMBROSE. May I comment on that?

Mr. STRATTON. Why don't you comment on that.

Mr. AMBROSE. On the AHIP, the production plan is to start producing in fiscal 1985. What was asked for this year was a small amount of long lead money for things like forgings in which we don't control the marketplace and are faced with very long lead-times. I don't believe we are going to waste it or have to change those particular parts, rotor forgings, and the like.

We are not going to agree to produce the AHIP until it has in fact reached the stage you are talking about.

Mr. STRATTON. Those are beguiling siren sounds but once you get yourself buying forgings then you are just a little bit pregnant. You have some sunk costs in it; it would be terrible to wash out the AHIP after all the forgings that we have bought and have sitting around.

I think this thing can work both ways.

Mr. AMBROSE. There is no doubt you get a little bit pregnant on anything.

Mr. STRATTON. The other thing that concerns me—and coming in late I just got caught up on what these figures mean—but these figures represent the estimate of the total number of hours that you would require to build a helicopter, and in the Government estimate, for example, it went up from 7,500 to 12,000 between 1976 and 1981. Could you tell me what is the number of hours required to build the Black Hawk, which is a much less complicated aircraft?

Mr. AMBROSE. Yes. We can do it on one of two bases. The Black Hawk on the same general basis is presently being built in about 22,000 hours. But that is at No. 400 or thereabouts Black Hawk. So, it is at the very tail end of production in equivalent units.

General Browne, do you know what the equivalent ending number for this is? The Black Hawk, incidentally, started out at 78,000 hours for the first 15.

Mr. STRATTON. Here is a much more complicated aircraft which you say is already at the end of the production line and it takes

22,000 hours. How could we conceivably estimate that the AAH is only going to require 12,000 hours?

Mr. AMBROSE. We have tried on another chart, another way. We have the same question. We want to make sure we are not carried away by something. On chart 4 we try to put all of these various helicopters in some perspective. Now, these kinds of charts where you try to compare one against the other are just not exact things by any means.

Here there is an industry definition of weight of aircraft in which you take out a lot of black boxes and other things and if you have just not read this too precisely, the Black Hawk——

Mr. STRATTON. Let me stop you at that point, Mr. Secretary, because as a farm boy from upstate New York it is a little hard for me to shift from one of these charts to the other so quickly. This has a lot of other tough things that you have to digest before you understand what you are doing.

It is my understanding—and the staff has reminded me—that last year when you were before this committee we pointed out the fact that the Black Hawk numbers were going up very sharply and didn't they think they ought to take a look at it. My recollection was that they said no, no, we were told everything was under control.

Here we find the same phenomenon with respect to the AAH and apparently nobody in the helicopter management field talks to one another so that General Browne could be advised that maybe he ought to look out for the same problem that occurred with the Black Hawk.

Mr. AMBROSE. I will have to correct you on that, sir. General Browne and his organization have gone to Sikorsky and with the full cooperation of the Sikorsky team that is now in place, that is now performing satisfactorily, have gone over every aspect of what happened, what went wrong, and I believe they have taken full account of the lessons there.

I was at Sikorsky a week or so ago and spent an entire evening and the next morning, myself, going through this for just that purpose.

We have done the same thing with Bell and with Boeing. I believe at least in recent times—and I can't speak of the distant past—the industry has been very cooperative.

Mr. STRATTON. I am not faulting the industry. I am not saying that anything went wrong. I am saying if the Black Hawk was using 12,000 hours a year ago, as was reported in our report on page 39, then it looks highly unrealistic that in December 1981 or May 1981 the Government should say: "Well, we expect the AAH to require only 12,000 hours."

Mr. AMBROSE. This 12,000 hours on this page is not the total of the program, by any means. The Black Hawk total numbers at the 400th or thereabouts—we will get you the exact numbers, and these I saw, myself, on their production records last week—are around 22,000 to 23,000 hours at the 400th unit total.

I think it is up around 40-some-thousand hours for this program. We have chosen to fasten on the manufacturing hours as being the biggest problem between ourselves and the contractor.

Mr. STRATTON. As of May 1981, according to this chart, the Government was estimating that it would take 12,914 hours and Hughes was estimating it would take 14,989 hours. That is at the point that we knew that it took 12,000 hours to build the Black Hawk.

How could the Government come in and say that they assumed that Hughes ought to be able to build the AAH at the same number of hours that a far less complicated helicopter could be built?

Mr. AMBROSE. I think what we should do for you, Mr. Chairman, is provide you an account on an apples-to-apples basis because I think we are not using the same references. These are average manufacturing labor hours. In the Black Hawk case I believe you are looking at, but I will check it, total hours of labor put into the airplane.

Mr. STRATTON. We say in our report—maybe Mr. White can verify this—that in terms of man-hours we have gone from 6,000 to 12,000 at this point.

Do you want to elaborate on that?

Mr. AMBROSE. If I could just repeat again, I looked at the charts, myself, a week ago, and their actual performance, which I think is the best measure, at about the 400th aircraft is 22,000 or 23,000 hours.

Mr. WHITE. I think it would be helpful to provide a matrix on apples to apples, total hours, and actual manufacturing hours, Black Hawk versus AH-64, and extrapolate, since Black Hawk was at the end of its learning curve.

Mr. AMBROSE. We have to get the same aircraft, same kind of learning curves and same reference to what the work is. I believe approximately the AAH is looking at something like 45,000 to 50,000 hours, apples to apples. With the Black Hawk that is in the 25,000-hour class.

We will get you a paper that sets all that out.

Do you have some better numbers, General?

General BROWNE. The Secretary is right, Mr. Stratton. What you are looking at is a manufacturing labor hour comparison here for what is being done by Hughes Helicopter and their major subs for putting out one unit across 536 to 446. The Black Hawk numbers you are citing on a relative basis are around 8,000 hours for that 12,000 hours.

We have taken into consideration the complexity and the more stringent aspects of the AAH. We will bring you that matrix on an apples-to-apples comparison.

[The following information was received for the record:]

AAH/BLACK HAWK COMPARISON DIRECT MANUFACTURING HOURS PER AIRCRAFT

	11 A/C average	446 A/C average
AAH:		
HH proposal	52,615	19,431
Government	28,740	12,583
Black Hawk	23,459	8,446

Mr. STRATTON. Mr. Mavroules.

Mr. MAVROULES. Let me follow up, because I think this is extremely informative this morning.

Have you now set a policy that we are going to make changes either through R. & D. or through other ideas from other areas, that you will make them after the helicopter is produced? Have you made that determination, Mr. Secretary?

Mr. AMBROSE. Let me start back a little further. I was amazed to learn when I came into the Pentagon that a program manager—and this is no reflection on General Browne as an individual—any program manager could make engineering changes in his program without even making a cost estimate, let alone getting budget changes and so forth. We stopped that last fall. That is the starting point, that you must not let changes take place without knowing what they are going to cost. Somebody will have to defend those.

Then the general plan is the one that I recited. We believe the development of this helicopter is substantially complete and that it works the way we want it to, or it will in production, and we don't need to change anything, so the intent is that we are not going to change anything except those things that have to be changed to make them work.

Mr. MAVROULES. Therefore we should see a marked improvement in the future?

Mr. AMBROSE. You certainly should, yes.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Thank you, Mr. Chairman.

You said that the ASARC added $528 million to the program manager's estimate to accommodate the most likely cost for 446 aircraft. Is that a management reserve or an analysis of known costs?

Mr. AMBROSE. It is a reserve in my nomenclature. I understand reserves are suspect in DOD because they are afraid the money will disappear. Perhaps if we went to table 1, the program manager, General Browne, came in and said his best estimate for 446 aircraft was $5.336 billion. The procedure in the Army and I guess in all of DOD is that a separate look is taken at these costs by the Army Comptroller and other people whose judgment is partly based on their own independent views of certain factors and partly based on the historical performance, and they said, given all the past performance not only in this program but also on others generally, given the fact that there was a new plant being put up in a new area and so forth, in their judgment we would be better off if we provided in the budget another $528 million, as you can see in table 3.

I am using the numbers in the next to the last column for 446 aircraft. The Army management, which was primarily General Vessey and myself, said we hear you; it is in fact more prudent until we can demonstrate to ourselves and everybody else that we can manage these things tightly enough, we had better put the money in; but we turned around to General Browne, as I am sure he will tell you, and said this is not your money; you get the 446 airplanes for your $5.3 billion. If you succeed in doing that, we will leave the rest of the money in the budget because we have decided we can afford that much out of all the other things we have to pay

for, and you get us some more of these things, because we don't like to cut them down and we can use every one of these we can afford to get.

So, it is in that sense money that we do not plan to spend to obtain 446 aircraft, but we do plan to spend it if General Browne can show us that he can get 500 and some odd airplanes for it.

That table 3 then shows that number that is at the bottom line where it says, "Provisions for most likely cost." Frankly, I have mixed feelings about this sort of thing, because I don't want anybody to get the idea that money is just there to be taken for the 446 airplanes.

The rest of the table is an effort to indicate to you where the cost increases have come from.

As you see, the dominant increase—of course it is in part because they have the dominant part of the business—is in the prime contractor, where they have gone up $592 million since the March 1981, SAR. We will talk a bit more in the next chart about where those costs came from.

Martin-Marietta has increased their costs also. In the Martin-Marietta case, though, I think you should take account of the fact that we have an arrangement with Martin-Marietta on a fixed price type basis with some provisions for incentives and escalation that caps the total program cost for Martin.

I think General Browne has done a fine job and we are going to take the lessons we have learned from that to other programs of getting the contractor to agree to put a lid on at least for the whole 446 sets of the most difficult part of this aircraft, the TADS, PNVS sight.

Keep in mind the rest of the program past this current year are still estimates on the part of the Government, estimates that are rational. Nevertheless they are not binding contracts.

I have discussed, and General Browne has discussed, with Hughes how we can get them under similar wraps. We have not succeeded in doing that yet, but we are trying.

The engine went down some because we are buying fewer. It also went up some because we moved them further up the learning curve of production. So there is an offset there. The Government went down some, mostly because there were fewer airplanes.

So, the total of all of that is an increase of $1 billion from last March, March 1981, of which half is a provision to protect us from our own past, if you will, a provision, however, which we say quite candidly we intend to spend if we can get more airplanes for it.

I think it is too early to consider removing it just because we report that we have got the first year back in the box or just about. I would rather see a year's good performance before I let go of reserves on any basis.

Now, if we can go to table 4, I will allude to it only briefly. We have tried various ways—we have others that we didn't display—comparing where this airplane or helicopter stands versus other helicopter programs.

Mr. STRATTON. Could you explain that in words of one syllable, Mr. Secretary?

Mr. AMBROSE. I will certainly try, sir.

The industry has a definition of "airframe weight." It is just an airframe that they call AMPR weight. I don't know what AMPR stands for—airframe minus propulsion, General Browne tells me. Using that definition and translating each helicopter that is shown on this thing to that kind of weight, then the costs on an hours-per-pound basis are charted here.

The two lines that run across the page are an effort to show a kind of band of uncertainty around all of this. There is nothing exact about this and you can get the specialists at each other's throats arguing about what to put in.

Mr. STRATTON. I don't understand what you are doing here. It looks like a ski slide. You have the lower—I don't remember whether it is the abscissa or ordinate, but the AMPR weight in pounds is what?

Mr. AMBROSE. If you look in the middle where the little bars are, the weight of this AAH is around 8,000 pounds. The little vertical mark that is labeled "should cost" is where the Government thinks the cost of the AAH should be in hours per pound.

The big vertical bar just above it is where the original Hughes proposal was. The very top of that bar is the original proposal. The bottom of the bar is about where they were a week or so ago.

The message is that the Government's "should cost" is within the bounds of the average cost of all the helicopters we have any data on, and Hughes is outside it but getting closer. If we could get in the middle toward the dashed line, we would be together.

Mr. STRATTON. In other words, the weight of the AAH is 7,500 pounds?

Mr. AMBROSE. As defined for this kind of index, yes.

Mr. STRATTON. That chart means that it should take 11 hours per pound?

Mr. AMBROSE. Yes; that is right. The contractor is saying it is going to take 15. Now, if you look just to the right of the vertical bar you see the UH-60A. That is the Black Hawk and that says that is on the high side of this band, too, and on the same basis, for what that is worth, the Black Hawk and the contractor's proposals are pretty close to the same thing.

Now, we think the Black Hawk was too high and we had better learn that lesson and get it lower on this one.

Mr. STRATTON. Isn't there a little difference between an aircraft that has a dense frame with a lot of wires and another aircraft which is much less dense, like the Black Hawk? How can you simply take the airframe weight minus the propulsion? Should there not be a factor for density weight per cubic foot or something of that kind?

Mr. AMBROSE. As I said, this is not an exact science. The factor of wires, for instance, that you cite should be taken into account, but you should also take into account that for instance the Black Hawk has a lot of titanium, a lot of expensive composites that are not in this helicopter.

As I said you can get the professionals at each other pretty hot and heavy as to what an exact measure is. We have gone at this any number of ways trying to get a handle on it. We are not here to tell you that we know any exact comparison. We just believe that the bottom line conclusion of all of the best efforts of industry

people and Government people tells us that, as shown on this chart, the Hughes proposal is on the high side of what it ought to be. The Government proposition is probably on the low side a little bit, and we are trying to drive them to the middle where we think we belong.

Mr. STRATTON. We have already established the fact that the Government's estimate of the number of hours required appears to be excessively low because it is almost the same figure for the hours required on a much less complicated aircraft.

Mr. AMBROSE. I don't know that I would agree with excessively low. I said, perhaps before you came in, that we have not disclosed the up side of the Government range because that is a negotiating tool that we want to save for the negotiations. That is the bottom of the Government range. We would, in fact, move up some as we get through the negotiations. We are not, however, trying to low-ball it.

These have a reasonable basis for being used.

General BROWNE. May I comment, Mr. Chairman?

Mr. STRATTON. Yes.

General BROWNE. I would like to point out that over the past few years Congress and this committee also have given me in my budgets about $100 million which I have spent for producibility engineering forward planning. Hughes helicopter got $62.5 million of that. I maintain there ought to be a payoff, a return on that investment, in more precise and better initiation of production to avoid the problems that we have specifically pointed out that happened in Black Hawk and others that did not have that money in advance.

As the Secretary told you a little earlier, we are going to initiate production. Better than 95 percent of our production engineering drawings have been released to the floor. All of our tools and machine tapes have been proved.

This is the kind of thing that that investment you gave me the last few years provides us to insure that the first few years of production we don't relearn the experiences we have had in Black Hawk.

Mr. AMBROSE. General Browne is not alone in this. I am with this. We are going to get together for that money.

Mr. STRATTON. I was not aware we gave them some of that money.

Mr. WHITE. You weren't the chairman then.

Mr. STRATTON. That was another committee, I think.

Mr. AMBROSE. In other words, you had better watch him from here on.

Mr. STRATTON. Mr. McCurdy.

Mr. MCCURDY. General, when was this "should cost" estimate made?

Mr. AMBROSE. I believe it was first put out in the February-March time period last year. Is that not correct?

General BROWNE. The "should cost" item is a little different from design to unit cost. Almost every 18 months I have caused a design to unit cost production cost where a team of engineers and cost analysts visited every single one of the 17 major subcontrac-

tors plus the prime contractor, Hughes, and associated contractor, Martin-Marietta, that builds the TADS and PNVS.

Consistently over the years we have arrived at that data based upon the design as we knew it then. You saw in table 2 our track record.

Mr. Chairman, I would like to go back a moment because you made a comment that I hope we have not misled you, that these changes we talked about occurred just recently. The real major changes in this program occurred in 1975 and 1976. The decision to implement was in January 1976, to put the Hellfire, TADS and PNVS on this airplane. I submit to you it was a good decision; it improved the lethality and combat capability of this system tremendously.

Having done that, we evolved that design. We had a major glitch in the airframe in 1979 and we forced a change to be made in the redesign of the tail. That change took us a year to get embedded in the airplane and get the design drawings going. We are not really changing this airplane at the last minute. Unfortunately, you cannot get a production proposal from 30 folks, change contractors every year when you don't have the design stabilized.

True, perhaps we should have done something earlier, but I submit it is not to the extent that we have been sitting here doing nothing and just didn't pay attention to what was occurring.

Mr. STRATTON. If I could just respond to that, I thought you were explaining that the reason for the big jump between 1979 and 1981 was because of all of these improvements. You now say they were put in when?

General BROWNE. The TADS and PNVS and Hellfire decisions were made in January 1976. They were confirmed at the ASARC in December 1976, and put into the program.

Mr. STRATTON. Then they should have been figured in in all the estimates by the Government which stayed pretty stable between 1976 and 1979 and only jumped when we got to 1981?

General BROWNE. That is right.

Mr. AMBROSE. Yes, they should have at least in part. There is no question about that.

Mrs. BYRON. Mr. Chairman?

Mr. STRATTON. Mrs. Byron.

Mrs. BYRON. Let me go on with a little bit of different assessment. I don't think this committee or anybody else has any disagreement on the fact that we have a need for this attack helicopter, nor do I think we have heard any discussion whatsoever on the technical capabilities. We have already put $1.2 billion in R. & D., so we are really basically down to production and production cost.

Have there been any problems with the initial phase of development of this as far as its capacity and meeting its goals and its mission, does it do what it is supposed to do?

Mr. AMBROSE. On the whole it does. There are certain elements that are not completely checked out, but they seem to be fairly ordinary problems. The TADS sighting system for instance went over to microcircuitry which has been tested as individual circuits, but won't be tested as a system until January of next year.

I think the consensus is that that is a fairly ordinary sort of problem.

As I understand it, originally they set what I considered an unrealistically high mean time to failure for that unit of 125 hours. They have achieved something like 30 to 35 now. If you look back at that requirement, it wasn't necessary. It was adequate to the total system reliability that is sought to get up around 40 or 45 hours between failures. We see no reason why that can't be achieved in just the ordinary course of working it into production.

There has been comment. GAO for instance, commented on risks associated with the engine. The engine is a takeoff on the existing design of a fairly ordinary kind that the aircraft engine crowd do as a routine thing. We don't agree with the assessment that that represents any significant risk.

There was a tail problem but that was changed a long time ago.

Mrs. BYRON. In other words, the people who have been doing the tests in the field have come back with an assessment that it meets all the criteria?

Mr. AMBROSE. If it is the committee's pleasure, I would like to introduce in the background here a crew from the 7th Infantry Division that participated in the OT-II testing at Hunter-Liggett. I would like to introduce them in any event.

The crew's captain is Capt. Larry Casper; Chief Warrant 2 William King; and Sgt. E-5 Craig Martin. These people had a lot of Cobra experience and they participated in this testing.

If you want to ask them directly what they think of it, you are certainly welcome.

Mrs. BYRON. A loaded question would be, does it work? Obviously it does or we wouldn't have gone this far along in the production scenarios.

Mr. AMBROSE. Yes, of course, it works.

Mrs. BYRON. I think the documented evidence is that it is necessary and it is needed. I certainly would hope it has been well documented before we spent $1 to $2 billion in R. & D. In a comparison of the two helicopters, do you find the transition into this new one a very easy step as far as having background in Cobra?

Mr. AMBROSE. I will turn to the people.

Mr. KING. From a pilot standpoint, the transition is relatively easy. I think I found it a most uncomplicated aircraft. Flying the aircraft basically is very simple. The systems create additional problems in the sense there are more switches to learn, more options available to the crew, which is an advantage in the aircraft. It takes a longer learning time.

The aircraft is generally very easy to fly, very easy to operate.

Mrs. BYRON. We have not put too many systems on it?

Mr. KING. Not at this point in time.

Mrs. BYRON. It has room for growth as far as systems are concerned?

Mr. KING. I think that is the most significant thing about the aircraft as opposed to what we have.

Mrs. HOLT. Do you have any criticisms of it?

Mrs. BYRON. Be honest. This is your own individual view.

Mr. KING. From a pilot standpoint, sitting in the cockpit, there are always a number of things that a pilot doesn't like. It goes from not having an ash tray, since I happen to be a smoker. My own criticism of the aircraft in total is, I am an advocate of some

sort of active acquisition system as opposed to totally passive acquisition as we presently have in the Cobra.

From a personal standpoint as an aviator, I would like to see it go into an active sort of radar system that is available, such as the Air Force utilizes. The technology is there to compact it down to a size to fit on the AH-64.

Mrs. HOLT. Is there room to incorporate it at a later date?

Mr. KING. I am not an engineer. I don't know presently that state of the art is available to bring it down to that. That is the only thing I would like to see in the aircraft. As it presently stands with the inclusion of TADS, and Hellfire some years ago, it is probably the finest helicopter I have ever flown. It gives me the opportunity to do my job the way I think it should be done and hopefully survive to collect my retirement someday.

Mrs. HOLT. Which we hope we will increase.

Mr. MCCURDY. Given the alternative of having increased retirement pay or the Cobra helicopter, which would you take?

Mr. KING. Would you repeat the question, sir?

Mr. MCCURDY. We are dealing here with, and our job is, to talk about cost, too. I appreciate your comments about performance. We are talking about $13 million apiece. If we were talking about questions of maintainability and sustainability and those kinds of items, is this helicopter worth $13 million each, and given the option I have to face, deciding whether to increase your retirement pay or vote for another $1 billion in this program, what would you do?

Mr. KING. I would vote for the additional funds. The reason I would do that is because the first thing to consider is if this aircraft can survive. I am not the only one that will survive; the aircraft can survive longer also. It has greater ability to fight at longer ranges; it can fight longer, do it at night. It can survive multiple hits. It can survive a crash to the extent that the aircraft is reparable. You can't do that with respect to the present aircraft. Somewhere down the line I am not sure of the figures of where it is going to balance out, but somewhere down the line the parts put into the new aircraft are going to recover themselves because you still have that aircraft available when you have gone through how many numbers of the present aircraft.

That is just the airframe and hardware. You are not talking about the cost of replacing the pilot. How much does it cost to replace the training of the pilot?

Mr. MCCURDY. What about the maintainability? With the high level of sophistication in this aircraft, do you believe it is easily repaired? We have had tremendous technological problems.

Sergeant Martin, what are the biggest problems you have in trying to maintain this system and do you believe it is going to become worse after use, wear, tear, and dust?

Sergeant MARTIN. It was a pretty bad situation, where we worked down there, at Hunter-Liggett. The aircraft is a lot easier to maintain than the Cobra. It was designed with maintenance in mind. Like the engine access doors open up to be work platforms. With the Cobra you are hanging on and you have tools sticking out of your pockets. You have to be an acrobat to work on the Cobra.

This aircraft requires a lot less maintenance and it is a lot easier to perform maintenance on.

Mr. MCCURDY. What has been your biggest problem in maintaining the helicopter?

Sergeant MARTIN. We really haven't had any big problems.

General BROWNE. In the operational test that Captain Casper and Sergeant Martin were in there were three advanced attack helicopters. They had a baseline of what?

Captain CASPER. Five Cobras.

General BROWNE. We only have six prototypes built. One crashed. Three of them are early prototypes that are not representative of the latest configuration. Still those airplanes, two old airplanes, but in the operational test have in excess of 1,000 hours each. They flew 48 hours a month on the average. They had a maintenance manhour, flight hour ratio of 5.65, which is about half of that of the Cobra.

Mr. AMBROSE. Mr. McCurdy, if I could comment on one of your points, we have the common problem of how do we afford all these things, that was not so specifically addressed, retirement pay versus this helicopter. I assure you that in the totality of these things one of the most urgent things that we need to pay attention to is our personnel compensation and incentives. We can't afford endless growth in these machines because it will come out of the hides of the people and we just can't do that.

Mr. MCCURDY. I agree. That is basically the point.

Mr. AMBROSE. That is more or less where we came to the limit and said enough is enough. We need this thing, but we are not going to pay any old amount of money.

Mr. STRATTON. Mr. Kramer, did you have a question?

Mr. KRAMER. Yes, if I might, Mr. Chairman.

I apologize for coming in late. I had another meeting.

I would like to ask the people who are involved—you have had extensive experience, I take it from your testimony, Sergeant Martin and Chief Warrant Officer King, with the updated version of the Cobra?

Captain CASPER. Yes.

Mr. KRAMER. How do you compare the two machines? You have given us a statement on the accessibility of maintenance and frequency of maintenance, but in terms of performance capabilities and so forth and so on, can you speak, even in percentage terms, of what you think of the updated Cobra, how it relates to hopefully what you have seen in your experience so far with the AH–64?

Captain CASPER. I am Captain Casper. We tested it against the fully modernized Cobra. There is absolutely no comparison. That is really all I can say, there if no comparison. They are two different machines. The AH–64 offers, myself as a commander, pilots and crew chiefs, the capability or the option to fight that battle at any time during the day or night. The current aircraft doesn't do that. We are restricted to fighting during the day and that is it.

Crew survivability, we talked about that; maintainability, easy to maintain. It truly is a mechanic's dream. It is a good machine. I don't think there is a comparison.

Mr. AMBROSE. Mr. Kramer, since you have brought up the Cobra thing, let me say we have a lot of Cobras that will be around for a

long time. As much as we can improve them, we will. That is both an affordability question and I think a commonsense question, but to make the best possible use of all of our assets—we can't turn all assets over every year—the kinds of things that we are aware of that we can do to it and we look at all sorts of propositions. Bell, of course, has that kind of proposition, gives us a better aircraft than we have presently, but it still doesn't compare with this thing.

We think we are going on with this one first and fixing up the others as much as we can. We also have to keep an eye on what the other side is doing. They are getting ahead of what we can do with the Cobra technically.

Mr. KRAMER. Have you examined the possibility of all-weather and night-fighting capabilities of Cobra?

Mr. AMBROSE. It is not all weather. None of these things are truly all weather. They operate in adverse weather. We have looked at adding a mast mounted sight to it and other vision aids and better armament and so forth. Some of these things will be done in the out years. We felt the most urgent thing right now is to get on with a better performer.

Mr. KRAMER. What kind of costs are involved in the Cobra updates by your estimates?

Mr. AMBROSE. You have to look carefully both at the definition of what is proposed and the firmness with which it is proposed. Its costs for improvements range from, I believe, as little as, in production of a large number, something like $4 or $5 million on up to $13 or $14 million. The lower numbers, we think, are not correct. They don't include all of the things that eventually will be put into the contract. They are more like some of the earlier estimates that apparently went with this one. It looks to us as though the likely cost of doing those things is up to $8 or $10 million, and that does not look like a good bargain, but we are keeping an open mind on this.

Mr. STRATTON. Mr. Hunter.

Mr. HUNTER. Gentlemen, you have spoken quite a bit about the maintainability and durability of the helicopter. I would like to hear a little about the offensive capability as compared to the Cobra, particularly antiarmor capability. What does this helicopter have that the Cobra does not have in the way of antiarmor?

Mr. AMBROSE. I think the best one to respond is General Otis.

Mr. HUNTER. I would like to ask General Otis and maybe the crew can comment.

Mr. AMBROSE. Either way you wish.

General OTIS. I point out in the offense capability there are two major differences. One is its ability to fight at night. With our total offensive suite of weapons that is the way we are going. The Bradley infantry fighting vehicle is equipped to fight at night. The Abrams tank is equipped to fight at night. The helicopter must be so equipped.

Mr. HUNTER. I spent a short time in Vietnam. We used to use the gunship at night, the Cobra. They operated at nighttime very effectively with the minigun.

General OTIS. I was also there and I understand that we can use a helicopter at night to fire into a specific area, but you can't see targets nor acquire them, nor do any more than area fire with a

helicopter at night that is not equipped for it. Nor can you navigate with them in a totally different terrain.

Mr. HUNTER. How about the fire capability?

General OTIS. That is the second of the two points. Today's Cobra equipped with the TOW and even with the improved TOW, is limited to 3,750 meter range, where the AH-64 armed with a Hellfire has a much greater standoff range, as a matter of fact.

[Deleted.]

General OTIS. In the indirect firemode the AH-64 can sit behind the hill and fire its Hellfire indirectly at a target that is laser designated by a ground laser designator and has done so in a test.

Mr. HUNTER. When you speak of a gound laser designator, what are you talking about? Say we have a Soviet tank four clicks away, what do you have to have in the way of extra equipment?

General OTIS. One that we already have is in the hands of artillery forward observers, ground laser designator. The other thing that is able to designate for it is a Scout helicopter, like the AHIP, with a laser designator mounted on it.

Mr. HUNTER. How many TOW's can a Cobra carry?

General OTIS. Eight.

Mr. HUNTER. How many Hellfires does the AH-64 carry?

General OTIS. The total load for that would be 16 Hellfires on an AH-64.

Mr. HUNTER. What else do you have besides the Hellfire on the AH-64 for armor? Is that it?

General OTIS. To kill tanks with, that is it, yes.

Mr. HUNTER. Do you have a minigun on the AH-64?

General OTIS. We have a 30 millimeter chaingun.

Mr. HUNTER. That is a cannon?

General OTIS. Yes.

Mr. HUNTER. You don't utilize the minigun?

General OTIS. No.

Mr. HUNTER. I think most people who served in Vietnam found the minigun was the most effective air-to-ground weapon that we had.

General OTIS. Right.

Mr. HUNTER. We used to have a Kit Carson Scout who was a former NA lieutenant. We asked him one day what he liked about his experience leading a platoon in the north. He used to say he didn't have any trouble with the B-52 strikes or what he called the fast-movers, which were the jets, but the big trouble was with the gunships.

I thought that was a really effective piece of equipment that we had.

General OTIS. Yes, it was.

Mr. HUNTER. Why did we leave it?

General OTIS. Because in Vietnam we were fighting a dismounted infantry-type enemy. We are going to be fighting a mechanized infantry in the future. We also have miniguns in our inventory with the Cobra and we have them also with Scouts. So, we have not denigrated that. But with the AH-64 and the antiarmor, antivehicle role, we put the best weapons on that for that.

Mr. HUNTER. I have a couple of other questions.

Gentlemen, I will see if I can talk to you after the hearing, but I think I have a couple of questions that may be important. In this day, in fact, we have some deflation going on, not inflation but deflation, in some parts of our industry. I notice some of our major automobile builders, for example, are actually beating down their suppliers and subcontractors on cost.

I wondered if in fact we are not at a point where we could renegotiate some of these contracts downward rather than upward? What is the possibility of that?

Mr. AMBROSE. I think before you came in I made a general comment, Mr. Hunter, to the effect that I don't believe in just riding inflation indices. I believe in treating those as manageable costs and getting the better of at least some of it, no matter what the number is. These budget estimates, as I am sure you know, are prepared with OMB-dictated inflation indices. These contracts, which I don't like, have inflation adjustments that I think are going to have to be changed—and they will be changed if I have anything to do with it—to do exactly what you are talking about, and go beyond that, not only get to the actual inflation rate. The contracts, incidentally, have indices adjustments that are tied to actual events, not to OMB forecasts. So, if the economy deflates we will pick that up even though the estimates don't.

Mr. HUNTER. What I am suggesting is that perhaps in some cases we should not necessarily follow the economy deflator because realistically these are tough times for a lot of suppliers. For example, I know at least in military construction we are getting some superdeals now because of the fact that the economy is at a low ebb.

I would suggest that perhaps there are some places where the Army could strike a tough deal or the major contractors could strike some hard deals with suppliers and subcontractors and actually come up with much better deals than if you simply take the CPI or even the military market basket CPI or go that route.

Mr. AMBROSE. I quite agree with you. That is part of what I meant when I said you have to fight inflation and take advantage of the marketplace in every direction you can find to do it.

Mr. STRATTON. Let me interrupt if I may. Mrs. Holt has to leave at noon. I think we ought to go into executive session so that we can get some of the plans that the Secretary had referred to with respect to improving the financial situation.

Mr. White has just a couple of quick questions for the record.

Mr. WHITE. On this cost increase in the program unit acquisition cost, $10.9 million to $16.2 million, just to make sure we all undertand what we are talking about, if I read these charts, what this says is the decision to go from 536 to 446 aircraft, since it lessens the basis to spread the R. & D. cost, that decision, not the cost of the aircraft itself, added $1.5 million per copy to the cost of the aircraft?

General BROWNE. $1.4 million.

Mr. WHITE. If I read over here on table 3 where you show a $1.034 billion delta from the SAR, if I understand this chart, $528 million or one-half of that increase is essentially management reserve that the contractor and the project manager themselves do not believe is going to be necessary and that you have some doubts

about; is that correct? About one-half of the cost increase is management reserve rather than actual cost?

Mr. AMBROSE. That is right. General Browne and I, together, believe we can buy the 446 aircraft for $0.5 billion less than the total shown.

Mr. WHITE. Of the amount that is left, including the $592 million shown for Hughes, how much of that is inflation?

General BROWNE. $381 million.

Mr. WHITE. That brings me down to about $281 million which says the unit cost of the helicopter which is not related to inflation or management reserve were adjustments because the schedule is about $500,000 per helicopter; is that essentially correct, General?

General BROWNE. Yes.

Mr. WHITE. The difference between 10.9 and 16.2 is methodology assumptions and rates, total procurement program, and not cost growth per se in the program; is that correct?

Mr. AMBROSE. I am not sure I followed that entirely, but I think that is correct to a large degree.

Mr. WHITE. You are not doing a very good job of articulating that around the Hill. We canceled the Cheyenne program in 1972 because of the cost growth in that program. If we had built the Cheyenne what would the program unit cost of that aircraft have been in current dollars today?

Mr. AMBROSE. I think we have the number, but it is about the same order.

Mr. WHITE. In other words, we wasted 10 years and could have had a Cheyenne inventory out there, but we canceled it because of cost, and we are back at the same point in real terms without the aircraft, with a lesser capable helicopter?

General BROWNE. That is a very good point. While the Cheyenne was designed for high speed, it did not fit into the type of tactics that we have had to evolve because of the increasing air defense threat that we see on the other side, and the aircraft was significantly larger.

The operating and support costs would have been a heck of a lot higher, too. All in all, while at that point in time it might have been a good idea, trying to leap it into today's environment really is not an apples-to-apples comparison.

Mr. AMBROSE. There is no question we are taking too long.

Mr. STRATTON. We will not have any time for Mrs. Holt to get into an executive session. We will have to cut off the questioning.

General BROWNE. May I make one more comment before we go forward, because I think it is important with regard to Mr. White's comment?

In effect, we want to buy 536 of these and when you take the recurring hardware costs which are the drivers, and that is why, Mr. Stratton, we focused in on these labor hours, that is what drives your outyear costs—if we had taken the cost proposed by the contractor, we would not have been able to afford that program. It would have been $6.5 billion to do it.

So, the fact we cut back to 446, while it still runs the unit price up, it makes it within a more affordable range of the Army's dollars to buy the program.

Mr. STRATTON. Under the authority previously granted, we will now go into executive session and unfortunately all of those not cleared for this highly classified material will have to leave the room.

[Whereupon, at 11:55 a.m., the subcommittee proceeded in executive session.]

Mr. STRATTON. What we are going to be talking about is going to be something that would be contractor proprietary information, so I think we will have to virtually clear the entire room, except for the three witnesses.

Mr. Secretary, do you want to give us what your proposals are?

Mr. AMBROSE. In terms of present costs?

Mr. STRATTON. You indicated you had some plans for adjusting the contract which you thought would be helpful and indicated you would give us that information.

Mr. AMBROSE. Yes. Let me ask General Browne—he has the numbers at his fingertips—to tell you what his budget is, where he stands relative to the contractor and how close they think they are going to get together here in the next couple of weeks.

General BROWNE. Within the overall 1982 budget for my Hughes portion, to get the prime contract signed up, we have an allocation of [deleted]. Right now we are at [deleted] proposed by the contractor, which, as you can see, is [deleted].

Now, the [deleted] is not what I want to sign for, because that has to carry us through, up to ceiling, on the contract if the contractor breaches it and goes that far. While that number was not calculated on the basis of any particular ceilings, since we didn't have a contract, it was based on the estimate, it was not intended to be at ceiling per se; it was intended to be somewhere between target price and ceiling price, with some little cushion to help us.

We don't normally budget to ceiling because it ties up too much money. When we do our job right, we ought to be able to come in around that. I am 1 or 2 percent costwise outside of the contractor arrangement at my top line. We started cost negotiations at 8 o'clock this morning in St. Louis.

I have every reason to expect that we will be within that budget.

The point I want to make to the subcommittee is that the reason we have focused on these charts that you have seen is that there are a whole lot of other things that go into the hopper, but those are the cost drivers that we must contain to be able to project our next year's cost as we go up the ramp to production and to keep those in some sort of contained band. That is our whole mission for this initial production contract and we think we are going to be able to do that.

Mr. AMBROSE. Did you say how far apart you are in actual dollars in fiscal year 1982?

General BROWNE. In fiscal year 1982 dollars we are [deleted] apart. We don't have a target yet because we have just started negotiations today.

The proposal on the target price we will get from Hughes today.

Mr. AMBROSE. Roughly, we are trying to drive [deleted] or so.

General BROWNE. I would like to have at least 10 to 15 percent reserve.

Mr. AMBROSE. That is not the same reserve.

General BROWNE. That is my reserve on contract with the budget price per se.

Mr. STRATTON. The way you negotiate this sort of thing, you negotiate first of all your ceiling price?

General BROWNE. Negotiate the target, then we look at the risk of going to either side of that. We will then establish a share line going to a ceiling.

The contractor asked for a 95 to 5 share ratio to ceiling. In other words, the Government pays 95 cents of every dollar. We are not going to buy that until he gets to the ceiling where he loses all fee, and then it becomes a fixed price contract.

Mr. AMBROSE. First of all, we negotiate on cost and cost at the very detailed work package level.

Mr. MCCURDY. Is [deleted] their cost?

General BROWNE. That is the target price to me today.

Mr. MCCURDY. [Deleted] is what you think the target should be based on "should cost"?

General BROWNE. That is right.

Mr. STRATTON. Where did they start?

General BROWNE. [Deleted].

Mr. MCCURDY. You have them down to [deleted] now?

Mr. AMBROSE. Not to be lost sight of in the numbers, but the numbers are important; there are other things we expect them to do. We think he has a bit of straightening out of his procurement function in order to get those subcontracts and manage them properly.

We think he has excessive cost from a good management standpoint in such areas as tooling engineering, production engineering, sustaining engineering. We have made other suggestions that aren't reflected in these costs. For example, they have in mind placing—what was it?—something like 400 separate tooling contracts. Just the management of that sort of thing in an organization that has to straighten out its procurement organization anyway is too much. So, we have suggested that he place a number of those tooling orders in bigger shops, aircraft company type shops, where, as a matter of fact, the shop is idle because it is winding down on other Government programs, and we are picking up the overhead cost in these other places. This way we get a double bargain if we can put the work in competitive tooling shops at good prices, which we think we can. We have made some suggestions.

Mr. STRATTON. If I understood your statement correctly, I thought you were recommending that he transfer his production operations from Indiana to some other place?

General BROWNE. Culver City.

Mr. AMBROSE. Presently his work goes on in Culver City in the L.A. basin. He is going to put the final assembly work and flight test work in a new plant in Mesa, Ariz. His machine work is in Culver City, but he is putting some out to other contractors, because he does not have the capacity to do all tool fabrication. They had originally had the tooling work going out in the Los Angeles basin in competition with other major defense contracts, and we are just not getting good prices that way, so we have made some

recommendations for how he can get the work into other parts of the country.

Somebody else said earlier there are other places that are hungry for this work. Now, those bargains, which we think we can strike, have not been reflected yet in these numbers.

Mr. McCURDY. Would that be a Government-owned plant?

Mr. AMBROSE. No. As I understand it, Hughes would build it on a leaseback arrangement. It would be a privately owned plant. The Government would provide the tooling. It is actually not a factory so much as it is a hangar for assembling bits and pieces into a finished airplane.

I think there has been a GAO comment that this is something to worry about, but in my book it is nothing to worry about at all. It is a simple kind of structure with no special facilities.

Mr. STRATTON. In the 1983 budget you have [deleted] for the AH-64 based upon negotiations for the 1982 contract. Have you been able to identify any of that funding as surplus to the 1983 requirement?

Mr. AMBROSE. If we succeed in getting that contract negotiated that is more money than we need. As I said a while ago, I prefer not to give that kind of money up until we have seen some performance out of these people.

Mr. STRATTON. When will we know about that?

Mr. AMBROSE. I think you can gauge it piecewise; you can see how they are doing about placing their subcontracts pretty early on. That constitutes about 60 percent of their total expenditures.

Sometime in the next few months we will know where we stand on that.

On their actual production performance it will probably be the better part of a year before they actually start cutting chips and doing things you can measure against the reference points.

Mr. STRATTON. Any other questions?

Mrs. BYRON. Mr. Chairman, I have several questions.

You touched on the fact that Hughes is proposing to build a new facility in Arizona. We are looking at a production and it is going to be ramping quickly from 11 the first year to 48, and 96 in the third year. With the advantage of moving—and I think there are scheduled risks involved in ramping up—isn't that a factor to be taken into consideration?

Mr. AMBROSE. I don't think, Mrs. Byron, that a buildup to that kind of rate is really very much of a buildup. The industry can and has gotten up to rates two and three times that much for the kind of factories we are talking about on a surge basis.

I think, myself, that it is an advantage to get out of the basin. We have a tight labor market. We have a work force, to be frank about it, with bad habits. It is easier to start a new crew.

In Mesa, from what we can determine, you have a work force that is more likely to have a higher productivity. It has a lower wage rate. The wage rates that the contractor has put in his proposal are high compared to what we know the wage structure in that area is. That is one of the things we are arguing about.

Mrs. BYRON. By the same token, this is probably the largest and the most advanced helicopter that Hughes has had under construction?

Mr. AMBROSE. No question about that. As you perhaps know, virtually the entire upper levels of Hughes' management have been changed the last year or two. You are looking at a crew that has been there not the past 20 or 25 years, but people who have come from what I consider more efficient producers—Boeing, Bell, Lockheed and places like that. What they have not done is move as promptly as I think they should to correct the more obvious management problems.

Mrs. BYRON. Basically what they have done is what Sikorsky had to do, instead of midstream, early on?

Mr. AMBROSE. With the spear that we are applying, they will do it faster and with less uproar. I think I said earlier that both General Browne and I have visited Sikorsky and the present management there has just been utterly candid and cooperative in explaining what screwups there were and what they did about them.

Mrs. BRYON. Hughes has learned from their mistakes?

Mr. AMBROSE. We certainly hope they have. We have, and we intend to apply it to Hughes.

Mr. MCCURDY. Why has the Army had such a difficult time with these helicopter manufacturers to produce something? Is it such a novel technology? What is the deal? We are concerned about keeping a warm industrial base. This is heavy capital improvement and this is a heavy learning curve for the Government to bear.

Mr. AMBROSE. Mr. McCurdy. I can't tell you why the Government has to learn and learn and learn these kinds of lessons any more than I can tell you why a company such as Sikorsky has had good years and bad years, has to forget and relearn it. It looks like a ridiculous situation to me.

Mr. MCCURDY. I am not blaming the Army. I am blaming the manufacturers, too. What has been Hughes' biggest problem from a management standpoint? Sikorsky totally underestimated. Has Hughes fallen into the same trap?

Mr. AMBROSE. Hughes has not built anything this large and complex before. Quite frankly, it has been run as something of a hobby shop under the former owner, without recognizing profits and management efficiency as the usual measures. They have come out of that into a new environment on the death of Mr. Hughes, where the management, Mr. Loomis and the rest of them who are now responsible, are holding them to account.

Mr. MCCURDY. Why did they get the contract in the first place? Don't we analyze a company's ability to perform a given contract?

Mr. AMBROSE. In this case, which I only know second or third hand, what I have been told is that they got the contract because of a clearly superior technical proposition in the face of expressed concerns by people, I think including General Browne, that Hughes was not the best to produce such a thing. I can't tell you exactly why the decision was made, but in fact I don't believe the Government in the past has placed enough emphasis on the capability of the manufacturer to perform.

Mr. WHITE. Do you have any doubt as to their ability today, with this new management team? Any doubts about their technical competence and manufacturing know-how to build this helicopter and build it on schedule?

Mr. AMBROSE. I have no doubt, but they have a lot of work ahead of them. People who are presently running the manufacturing and other parts of this thing are experienced in those professions in other companies, and they have good track records; they should be able to do it.

Mr. MCCURDY. Comparing this with Black Hawk, here we are into Apache; we have blown off $5.5 billion in the learning curve. We are over the hump. We are now going into multiyear. We think we will get some marginal savings after all this increase.

Where is this AH-64 in comparison tracking with Black Hawk? Are we 3 years behind? Do we think we are catching up? Are we to the point that there is no return?

Mr. AMBROSE. I am not sure I understand exactly the question you are asking.

Mr. MCCURDY. General Otis has been involved in the Black Hawk. He knows what I am thinking. In Black Hawk we are at a point now—we have said we have had a $5.5 million cost growth since 1976. We are at the point where we can go into multiyear and maybe achieve some savings. It is really a point of no return. We have such a heavy investment that we have no choice but to continue.

Are we in the same position in Apache?

Mr. AMBROSE. In terms of no return, I think that is really correct, although we have given thought to how we would do this by going to somebody else. But there would be a delay. I doubt that we would save any money.

We have looked at the Black Hawk. Maybe this will help indicate the size of the problem. The original proposed cost for Black Hawk in terms of hours, which is easier to cope with than all this inflation business, was for a starting point of around 56,000 hours, and coming down to the present production level at around 25,000 or 26,000. They are down at that level now. So, they have got where they intended to go, but in the startup phase they were about 78,000 hours. So they blew 25 percent of the original estimate over, say, the first 100 aircraft.

The reasons for that are numerous and I think well known in retrospect.

We compared this helicopter, given all the input like the production tooling we have talked about and so forth, and we think we ought to be able to save that 25 percent; in other words, not have to relearn those lessons.

The contractor is still hanging in for 25 percent plus up for the piece that is in Mesa. That we are just not willing to agree there is any need of. That is part of the ongoing negotiations here. It is not a big dollar thing for fiscal 1982, but it does have cost ramifications in future years. So, what the contractor in effect is saying is that he wants to replay Black Hawk and we are saying no way.

Mr. MCCURDY. Is there anything that we as a subcommittee, by having hearings at Sikorsky, which should have been done 5 years ago—I think we put some pressure on Sikorsky—maybe somebody from this subcommittee ought to go out and have a meeting with them? Is that going to complicate or assist?

Mr. AMBROSE. Let me assure you that this subcommittee and the one in the other body have already served noble duty; just the fact

of having these hearings has put an element of realism into what we have been telling these guys. You are certainly welcome to go out there and tell it to them straight on.

Mr. McCURDY. I think we need some management people up here. Maybe we ought to go out there. We have to let them know that there is somebody watching them closely.

Mr. AMBROSE. The thing you can do incessantly and over and over that will help very much is to assure them this is for real, that this is not some momentary hubbub and it will all go away and be forgotten. It is difficult for me to do that. I am kind of a new boy on the block. They don't know whether I am this way or that way, and I won't be around forever. I think the totality of keeping the pressure on that says, "We have had it; we are not going to go through these exercises; we are not going to go away and next year give you your billion-dollar overrun; we will cancel the contract if you don't cut that out."

Those are the kinds of messages that this committee, the Congress in total, can keep delivering. I think the public has had it. I think Congress has had it.

Mr. McCURDY. I have been preaching that. I think we have to do it. I think if we make that statement over and over again, and maybe the rest of us here on the subcommittee might stress the fact, some people ought to go out there and pay a real visit, like we did on Black Hawk, ALCM, and Patriot, to keep their feet to the fire.

Mr. AMBROSE. It is not just this contract or this contractor. That message has to be laid on them all. I can only say be my guest.

Mr. McCURDY. I think we need to make a recommendation and maybe some others would like to join.

General BROWNE. I might make a point. I am going to have the Apache here in town next week and we invite the committee to come out and view it. You will also be given some orientation rides at Fort Belvoir in the afternoon. We will be more than happy if you do take a ride in this machine.

Also, the company management will be in town. There is nothing wrong that I know of if you wish to discuss with them some of those points.

Mr. McCURDY. Will you let the staff know when they are going to be in town, and maybe we can schedule a quick session or at least an informal session?

Mr. AMBROSE. Most of these contractors, I believe, come over here and tell you what they believe the proper perspective is. I guess my comment would be, tell it like it is back to them.

Mrs. BYRON. They might as well hear from us like it is, because I think we represent a different factor.

Mr. AMBROSE. Sure. We are all in this together. We need these aircraft but we are not going to pay through the nose for them. We need all the help we can get to keep them in line.

The fact that there has been so much movement in the last month or two, I certainly credit it to the committee's activity, as having a good influence.

Mrs. BYRON. Mr. White has one final question.

Mr. WHITE. I have a question for the secretary and General Browne: You have indicated that the contractor came down from

[deleted] to [deleted] or in that range, and that you do have very substantial management reserves, [deleted] that you don't think is probably all going to be needed if, in fact, any will be needed. Some portion of that is allocated to 1983. The contractor is coming down in negotiations Do you think you can get him down further? We are going to have to mark up in this subcommittee on the 31st of March; we can't wait for you to see what the favorable trends are on obligation patterns 9 months from now. We are going to have to defend this program—if we support it—on the floor against a great deal of criticism; the impression that things are getting better is important. Is there as much as $15 million in the 1983 budget that you think could be safely reduced based upon where you think you are and are going now?

Mr. AMBROSE. Do you want to answer from your numbers? The answer is quite possibly. I would like to take a look at it.

Mr. WHITE. Could you produce that answer before the 31st of March?

Mr. AMBROSE. Yes.

I understand the thrust of the question. We will do it if we possibly can.

[The following information was received for the record:]

As much as $15 million could be available from the management reserve funds in fiscal year 83. Negotiations with the contractors indicate that the program manager should be able to sign a contract at his budget, which does not include management reserve. If that proves true, I would recommend those funds be used to procure more aircraft.

Mr. WHITE. One of the alternatives which is being suggested—and there are a lot of alternatives floating around—is the Cobra 2000, which, as I understand it, is a paper airplane. General Otis, you have not been called upon as the user very much today. Would you give us your judgment, and perhaps General Browne can, about how long it would take to complete R. & D. and field a Cobra 2000, and how much it would cost, incidentally, and why you don't think that is an acceptable alternative to Apache?

We are going to have to be able to respond to those questions.

General OTIS. I will give it from a user perspective and from a technical side, General Browne.

From the user side, as we have investigated that so-called paper Cobra 2000, it now appears that you have an entirely new aircraft. We have already stretched the Cobra to the extent we can. It no longer has very much in the way of potential.

When you change the engines, you put Hellfire on it, you put night vision devices on it, and you try to make it look like an AH-64, you will have to invent a new airframe.

The cost seems so far to us to be very close to the AH-64 cost; therefore, you buy nothing and the user says we need the AH-64's day/night capability and adverse weather capability now. We won't get it with the Cobra 2000.

Mr. WHITE. Do you have a feel for how long it will take just to get there?

General OTIS. No; I don't, but I think General Browne does.

General BROWNE. Again, Cobra 2000 will have to be finitely defined before we can give you precise estimates; however, with the kind of things we hear about, it would take, in our estimation, with

twin engines, new rotors, Hellfire, and all those things that General Otis talked about, it would take in our estimation 48 to 52 months; it would cost on an average, if you want it in today's dollars, about $8 million a copy.

If you put it in the dollars you are really going to have to buy it in, it is $14 to $15 million a copy, and you wait 5 years to get them.

Now, those kinds of estimates are probably as good as the estimates you have had in the past, so you can probably add 30 percent to that in reality.

Mr. WHITE. No cheaper and less capable?

General BROWNE. No cheaper, get it later, and it is less capable.

Mr. AMBROSE. If I can make a last comment on that as a newcomer on the scene, it seems to me that it is high time that the Government settle down on a few of these things and stop revisiting them so frequently. That is costing a lot of money.

We ought to make up our minds. We have made up our minds now in a couple of these instances—AHIP and this one—that have been going back and forth for 10 or 15 years. We are better off to accept those decisions, I believe, and get on with them and drive the prices down as far as we can, as opposed to revising these things every year.

Mrs. BYRON [presiding]. I could not agree with you more.

I appreciate your time coming before the committee this morning.

The committee stands in recess until 2 o'clock.

Mr. AMBROSE. Thank you very much, Mrs. Byron.

[Whereupon, at 12:25 p.m., the subcommittee was adjourned, to reconvene at 2 p.m. the same day.]

AFTERNOON SESSION

NAVY AND MARINE CORPS TACTICAL AIR WARFARE PROGRAMS

Mr. STRATTON. The subcommittee will come to order.

This afternoon, the subcommittee will review Navy and Marine Corps tactical aircraft programs.

I think it is worth noting as we begin this review that the Navy aircraft procurement request before us is being driven, to a large extent, by the maritime superiority strategy—the 600-ship Navy plan—adopted by the administration, and endorsed by the Congress last year. That broad strategy decision results in 40-percent real growth in the Navy procurement accounts and is also reflected in the 20-percent real growth in Navy aircraft procurement since last year.

This strategy and the timetable and the force mix to achieve it will undoubtedly be one of the major issues in the budget debate this year. However, it is important to note that while the long-range implications of this strategy should be understood by the subcommittee, they actually have relatively little impact upon the fiscal year 1983 Navy aircraft request.

The issues which should be of paramount concern to the subcommittee today may be summarized briefly as the following:

1. COST ISSUE

Why is the Navy able to procure only one more aircraft this year than last despite 20-percent real growth—$2.5 billion—in the APN account? The Navy now has eight aircraft costing more than $30 million apiece.

2. F-14/F-18 ISSUE

Although the F-18 was originally justified to the Congress as a fighter, the Navy has now decided to buy 336 additional F-14's at a cost of $23 billion. We will want to understand the reasons for this revision to the contract the Navy made with the Congress.

3. AV-8B ISSUE

Despite a strong congressional mandate, and despite 20-percent real growth in the APN account, the Navy actually reduced the AV-8B procurement from 24 to 18—a funding profile which makes the AV-8B an inordinately expensive aircraft. This stretchout raises new doubts as to the Navy's commitment to procure the AV-8B for the Marine Corps.

4. SH-60B ISSUE

In an effort to respond to congressional pressure to reduce program cost, the Navy has accelerated procurement of the LAMPS III helicopter. However, it appears that some portion of the fiscal year 1983 aircraft would actually be warehoused for up to 2 years because the decks would not be available to accommodate them. Since it would be rather difficult for the committee to argue the urgency of a requirement to warehouse aircraft, we will want to explore this issue carefully.

Mrs. Holt, do you wish to make a statement or comment on this afternoon's hearing at this point?

Mrs. HOLT. Mr. Chairman, as I indicated yesterday in the Army aircraft hearing, I think the Congress will be very interested in seeing how the services are responding to the requirement we established last year to provide a 3-year defense plan for equipping the Guard and Reserve forces. As we saw yesterday, the Army is requesting nothing for these forces. I hope the Navy has taken the congressional mandate more seriously.

I am also concerned over a very puzzling phenomenon. For years, we heard the services argue that a major factor in the rising cost of weapons systems was their inability to fund economic rates of production due to fiscal constraints.

However, I must admit that I am at a loss as to what it is going to take in the way of funding to provide economic rates of production. In the last 2 years, Navy aircraft procurement has increased from $6.2 billion to $11.6 billion—an 87 percent increase. And yet, we're still unable to procure anything but the F-18 at anything approaching an economical rate. As you pointed out, we now have eight Navy/Marine Corps aircraft that cost more than $30 million. A-6 production is down, F-14 production is down, CH-53 production is down, and P-3C production is down.

Frankly, I have serious doubts at the rate we are going as to whether a 600-ship Navy is affordable because the more we buy, the more it seems to cost. That concerns me greatly because I believe we need a 600-ship Navy and I support the maritime superiority strategy.

That is a great concern to all of us. We are trying hard to rebuild and I think it is very, very important.

Mr. STRATTON. Thank you very much.

We have a very distinguished group of witnesses here this afternoon. The principal witnesses are Vice Adm. Wesley L. McDonald, Deputy Chief of Naval Operations, Lt. Gen. William J. White, Deputy Chief of Staff for Marine Aviation, Vice Adm. Ernest Seymour of the U.S. Navy, Commander of the Naval Air Systems Command, in a backup role, surprisingly.

I also take particular note that we have two commodores listed as backup witnesses, Commodore John C. Weaver, U.S. Navy, F/A-18 Project Manager, and Commodore Robert H. Shumaker, U.S. Navy, Defense Suppression Project Manager.

I wonder if those officers would mind standing up because I haven't seen a commodore yet in uniform. [Laughter.]

Great. Having had something to do with reestablishing the Commodore rank, I felt badly that I didn't see anybody in uniform. The last commodore I saw was Commodore Bates up at the Naval War College back in 1948, I think it was.

Admiral McDonald, do you want to start the presentation on behalf of the Navy?

STATEMENT OF VICE ADM. WESLEY L. McDONALD, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE)

Admiral MCDONALD. Yes, sir. I appreciate it very much, sir.

As a leading advocate for the Commodore rank and your tenacity has paid off and these two gentlemen along with 35 others are the recipients of that effort.

Mr. STRATTON. I have been trying to hint to the Navy that since I was the guy who recreated the rank they ought to make me a commodore too, but it has not gone over very well.

Admiral MCDONALD. Mr. Chairman, it is a pleasure to be here with you this afternoon. I am sure I speak in that sense for the other members of the team who are here. Rear Admiral Hostettler is at the head table to talk about weapons procurement, Navy, which will follow the APN side of the procurement.

We do welcome the opportunity to present to you our request for 1983 at this time.

As you may have noted, I have a rather lengthy statement which I would ask be submitted for the record. It has been submitted to the committee prior to the hearing for their perusal. If we could enter it into the record I would appreciate it. I will give you a brief overview of that this afternoon, sir.

Mr. STRATTON. Fine. Without objection that will be entered. Then you may proceed as you see fit, hopefully covering some of the points that Mrs. Holt and I have touched on in our preliminary statements.

Admiral McDONALD. Yes, sir. If it also meets with your concurrence, Mr. Chairman, I would like to go ahead and make my oral remarks and then turn the podium over to General White who will talk to those things unique to Marine Corps aviation as part of the Department of the Navy aviation request. With your permission we will proceed with that, sir.

As a starting point I thought I would describe very briefly the composition of naval aviation so that each of you would have a baseline of where we are and have an appreciation of the impact that the fiscal year 1983 budget request has on naval aviation.

DON AVIATION FORCE REQUIREMENTS

13 carrier air wings, 24 patrol squadrons, 3 marine air wings, plus training, support, and reserve wings.

The slide indicates that we presently have 12 carrier air wings, 24 patrol squadrons, 3 Marine air wings, plus the normal complement of training, support, and reserve aircraft. With the introduction of U.S.S. *Carl Vinson* 1983 we are planning to stand up a 13th Air Wing.

As you know the *Carl Vinson* will be commissioned this Saturday in Norfolk.

Training aircraft are used primarily in our training command squadrons. The support aircraft I refer to are our own organic logistics aircraft. With relation to the Reserve Forces, the Navy has two carrier Reserve air wings, the Marine Corps has 1, and we have 14 Reserve patrol squadrons.

DEPARTMENT OF THE NAVY, TACAIR

WINGS

13 USN air wings, 2 USNR air wings, 3 USMC air wings, 1 USMCR air wing.

SQUADRONS

26 USN VF, 26 USN VA, 13 USN VAM (TKR), 10 USN VAQ, 4 USNR VF, 6 USNR VA, 2 USNR VAQ, 2 USNR VFP, 12 USMC VMFA, 8 USMC VMA, 5 USMC VMA (AW), 1 USMC VAMQ, 1 USMC VMFP, 2 USMCR VMFA, 6 USMCR VMA.

This slide depicts our tactical Air Force. As you can see, there are 26 fighter, 26 light attack, and 13 medium attack squadrons in the Navy.

As you can see, I am talking in terms of 1983, Mr. Chairman, because I am reflecting there are 26 light attack and 13 medium attack squadrons in the Navy. That is when we stand up that 13th carrier air wing.

The Marine Corps has 12 fighter/attack squadrons, currently flying F-4's. The eight Marine Corps light attack squadrons include both A-4 and AV-8A squadrons; additionally, the Corps has five A-6 squadrons which make up the medium attack force.

As you are aware, there is a great commonality between Marine Corps aircraft and Navy aircraft. The Marines go to sea as a part of our carrier air wings just like naval carrier squadrons do aboard carriers.

The other members of this team are, as we say, "The cats and dogs," the reconnaissance aircraft, E-2 AEW aircraft and the EA-6B VAQ aircraft.

Additionally, we have four naval reserve fighter and six reserve attack squadrons and the Marine Corps Reserve is comprised of two fighter and six light attack squadrons.

NATIONAL—CARRIER AIR WING COMPOSITION

13 CARRIER WINGS,[1] 1983

24 VF (F-14), 24 VA (A-7), 4 VAW (E-2C), 10 VAM (A-6E), 4VAQ (EA-6B), 4 TANKERS (KA-6D), 10 VS (S-3A), 6 HS (SH-3H), 1 COD (C-1A).

This viewgraph shows the composition of our air wings, Mr. Chairman. As you can see, a carrier air wing has 24 fighters, 24 light attack, and 10 medium attack aircraft, augmented with usually 4 KA-6D tanker aircraft.

Now having established the background of naval aviation composition, let's look at what our attrition rates are and how they relate to requirements.

Community	Annual estimated attrition	Attrition plus retirements per year
TACAIR:		
VF/VA	66	150
ASW	2	8
AEW	1	5
Helicopters	23	75
Patrol	2	16
Support	3	16
Training:		
Jet	9	31
PRO/HELO	4	14
Lamps	4	9
Total	114	324
		(349)

You see here our annual estimated attrition. This figure, admittedly, looks rather staggering, and I am speaking directly of the 114, the aircraft that we lose annually due to crashes or some other sort of attrition.

I can assure you that when people fly airplanes, they attrite them in every way known to mankind, in spite of the fact that we try to reduce this loss each year in every way that we can imagine.

I might add that 1981 was by far the best aviation safety year to date. A comparison of 1981 and 1980 statistics reveals a cost-avoidance savings of $750 million in aircraft replacement costs.

AVIATION SAFETY

[Recent year comparison]

	Calendar year			
	1978	1979	1980	1981
Mishaps	129	117	128	100
Rate/100,000 flt hrs	6.62	6.12	6.61	4.95

[1] In transition from 12 to 13 CVW during fiscal year 1983-84.

AVIATION SAFETY—Continued

[Recent year comparison]

	Calendar year			
	1978	1979	1980	1981
Destroyed aircraft	102	95	112	87
Fatalities	129	79	91	83

I would like to point out on that slide, Mr. Chairman, the number of mishaps was reduced by 28. That in itself shows at least a little more attention and a little better skills and maybe lack of material problems. The accident rate was reduced significantly for the first time ever to under 5.0.

The number of destroyed aircraft was reduced by 25. More importantly than all of those figures, we saved eight lives. A 10-percent reduction in lives lost and 25 percent reduction in numbers of aircraft destroyed from the previous year. We are very hopeful that this trend will continue. We are expending lots of effort in trying to do that.

This attrition, plus the retirements which take place, drives us to a total requirement of about 324 airplanes that we need to replace on an annual basis. This number 324 is our current required procurement baseline. It will grow incrementally to 349 as we build toward 15 air wings in the 1990's.

Aircraft procurement—fiscal year 1983

A6E	8
EA6B	6
AV8B	18
F-14	24
F/A-18	84
CH-53E	11
AH-1T	—
SH-60B	48
P-3C	6
E-2C	6
SH-2F	18
C-9B	—
C-2A	8
T-34C	30
F-5E	—
TH-57	21
EC-130Q	—
KC-130R	—
Total	288
Total APN (billions)	$11.582

Admiral McDONALD. The fiscal year 1983 budget reflects a reasonable number as far as meeting attrition and retirement deficits. It does not quite get there, but it is getting closer.

While the fiscal year 1983 budget procures essentially the same number of aircraft as in the fiscal year 1982 budget, the fiscal year 1983 budget reflects increased procurement of the F/A-18, AV-8B, and SH-60B with their relatively high, mostly nonrecurring, up front investment costs.

I think it is important to point out that roughly one-third of the $11.5 billion request is devoted to three less visible, but equally es-

sential, efforts designed to maximize existing aircraft systems. They are:

Fiscal year 1983 aircraft modifications

	Millions
Readiness: reliability/maintainability and survivability	$617.2
Capability: effectiveness	466.4
Force level: conversion in lieu of procurement (CILOP); service life extension program (SLEP)	112.2
Safety	61.3
Total	1,311.1

An aircraft modifications program which modifies aircraft to extend their service life, upgrade their capabilities, improve their readiness, and correct safety deficiencies. This is one of the most cost-effective ways of keeping abreast of the emerging threat.

Fiscal year 1983 aircraft spares

	Millions
Initial spares	932.0
Replenishment spares	1,148.9
Total	2,080.9

An aviation spares support program which reflects our determined effort to assure the sustainability of our weapons systems to achieve our goal of a 70-percent mission capable rate for all of our aircraft. The present program is designed to correct previous spares deficiencies and prevent similar problems from occurring in the future. For the first time in many years this account is considered 100 percent funded.

Fiscal year 1983 aircraft support equipment and facilities

	Millions
Common ground equipment	415.2
Aircraft industrial facilities	24.4
War consumables	9.3
Other production charges	31.1
Total	480.0

Finally, an aircraft support equipment and facilities funding line that funds a wide variety of support, ranging from rework facilities to automatic test equipment. Without this solid base, our aircraft cannot operate at their full potential.

Mr. Chairman, the President's fiscal year 1983 budget continues a positive trend in naval aviation in terms of force level assurance. We obviously still have a way to go, but I am pleased to say that naval aviation, like the Navy as a whole, is on the move. We are significantly more capable today than we were 2 years ago.

At this point, I would like to turn the floor over to General White for his remarks

Mr. STRATTON. Thank you.

General White?

WRITTEN STATEMENT OF VICE ADM. WESLEY L. MCDONALD

Mr. Chairman and distinguished Members of the Committee:

I am honored to appear again before this body to present the fiscal year 1983 procurement request for naval aircraft. I am accompanied by Lieutenant General White, Marine Corps Chief of Staff for Aviation, and Vice Admiral Seymour, Commander Naval Air Systems Command.

It is my privilege today to describe briefy the character and composition of the Navy-Marine Corps aviation teams, and the vital function of this budget request in maintaining the viability of that team.

In this budget request, we have sought to strengthen Naval Aviation through a balanced approach to competing priorities. We have not proceeded with procurement as far in some areas as I would like, but I am satisfied that we have planned the distribution of this procurement in the most profitable manner for naval aviation.

I would like at the outset to place our budget request in the appropriate context. To begin with I want to make three observations:

- I am pleased with the Carrier Battle Group's performance in recent years as an instrument of foreign policy. Ensuring the Carrier Battle Group's ability to be ready when called upon and powerful enough to preserve peace on a daily basis is essential in providing maritime superiority.

- Second, our national wartime strategy requires that we maintain the ability to protect U.S. interests on any level of conflict. The development of Naval Aviation requirements reflected in the fiscal year 1983 budget request are measured carefully against a Soviet Navy that is also capable of conducting naval warfare operations on any level of conflict.

- Naval Aviation resources are allocated in a priority of readiness; wartime sustainability, maintainability, capability; modernization of existing forces and an increase in force levels. Our fiscal year 1983 budget request represents a balanced approach where each of these elements is permitted to interact in attaining the strongest possible Naval Aviation force.

FORCE EFFECTIVENESS

There are three central elements that determine our force effectiveness: System readiness, the quality and quantity of people who maintain and operate the systems, and the capabilities of the individual weapons system.

Although we have witnessed a recent improvement in measurable readiness, Naval Aviation still has a way to go to achieve the goal of an Aircraft Mission Capable (MC) rate of 70 percent. I am pleased to report, however, that the trends are moving in the positive direction. The FY-83 budget request for spares and component repair funds are set at 100 percent of requirements for the first time in years. Additionally, resources are provided to ensure that our aviators obtain adequate flight hours to maintain the flying proficiency necessary for them to perform their warfare missions. Readiness is the watchword of our resource allocations; as I said earlier, Naval Aviation is not where we want to be in terms of our readiness goals, but all indicators are pointing in the right direction.

At this time last year, I was deeply concerned about the critical shortage of trained petty officers and aviators in our force. Since then, the initiatives of the Administration, and the Congress, have reversed what I personally perceived to be a very dangerous trend. I applaud those recent efforts, but hasten to caution that we are not out of the woods yet in our retention problems. I elicit your support in continuing to approve programs that are vital to the retention of skilled people in naval aviation.

The last element in the effectiveness equation is the capability of our weapon systems, including force level considerations. Our current carrier force level consists of 12 deployable carriers, a carrier in SLEP at Philadelphia and a training carrier, the USS LEXINGTON. For each deployable carrier we have an airwing assigned. We will have 13 deployable carriers with the introduction of the USS VINSON in 1983, and are planning to standup a 13th airwing at that time. When the USS ROOSEVELT enters service in

1988, we will have 14 deployable carriers and will stand up a 14th airwing. The Navy's 600 ship objective, built around 15 CV battle groups will require standing up a 15th airwing in the 1990's.

FORCE COMPOSITION

The FY-83 budget request supports a complement of formidable aircraft in those airwings that ensure the achievement of control of the seas and projection of power ashore. I would like to describe a few of the more significant programs in this procurement plan.

The A-6E INTRUDER is the all-weather attack aircraft for both carrier and Marine Corps squadrons. This multi capable aircraft is the only combat-proven aircraft of its type in the world. We believe that the INTRUDER is the standard by which others will be judged for many years to come--and there is no logical successor for its mission on the horizon. The funds requested for fiscal year 1983 will permit the production of eight aircraft, and advance procurement for eight A-6Es in fiscal year 1984. Although this is a reduction from last year's procurement of twelve we can accept this two year reduction created by affordability constraints and still achieve our goal of 14 airwings by 1987.

One of our more important tactical aircraft fires no missiles and delivers no ordnance--but its presence in a defense suppression role when the bullets and missiles begin to fly is critical to the success and survivability of our strike aircraft. Of course, I refer to the EA-6B PROWLER. The PROWLER is the only combat-proven tactical electronics jammer aircraft currently in production. Its capabilities are impressive, and its indispensibility in combat is a matter of record.

The F-14A TOMCAT and its integral PHOENIX missiles is our premier fleet air defense aircraft. Clearly, the TOMCAT is not without its problems--when you are at the frontiers of technology there is risk--but we are addressing the problems in a forthright and aggressive manner. There are three areas of concern with the F-14--the weapons system, the engine, and needed force levels. An important improvement to the weapon system in the next few years is the replacement of the analog processor of the AWG-9 with a new

digital, programmable signal processor, or PSP. The PSP will improve the radar's reliability and maintainability, reduce its susceptibility to jamming, provide the capability to identify targets at longer ranges, and improve long range target resolution. As you are aware, the TF-30-414 engine has been a source of serious concern, both in terms of performance as well as reliability and maintainability deficiencies. We currently have an on-going component improvement program that should reduce the engine stall rate by 50 percent and improve the depot level rework interval and low-cycle fatigue life by a factor of two. The changes being proposed by the manufacturer are designed to eliminate the early deficiencies of this engine and to restore it to an acceptable standard of reliability and performance. We are monitoring this effort closely and will keep the members of this committee apprised of progress in this area. In force level considerations, the Navy plans to transition the FORRESTAL airwing and the airwing embarked on subsequent carriers to the F-14 by the late 1980s. We have just completed transitioning the 15th and 16th Navy fighter squadrons from F-4s to F-14s and will transition the 17th and 18th squadron during this year.

A part of our overall affordability problem this year, as last, is the high initial capital investment necessary during the early years of the F/A-18 HORNET and now, the AV-8B HARRIER. Naturally, these high initial, and largely nonrecurring, costs produce for the time being a high production unit cost, but the benefits of economy of scale now are beginning to manifest themselves for the F/A-18 and should in later years for the AV-8B. All of our Navy light attack squadrons will be equipped with the F/A-18. Since these aircraft are fully fighter capable, they will be able to augment the F-14 in the outer air battle if the threat levels dictate. The relative ease of pilot adaptation to the F/A-18 systems operations is reinforcing our total confidence that our attack squadrons will be able to swing to the fighter role at any given time. This will provide the battle group commander an unprecedented level of flexibility with his embarked airwing aircraft that can prove absolutely vital in determining the outsome of a battle.

Airborne early warning, and the critical airborne command and control functions, are performed superbly by the E-2C HAWKEYE. The HAWKEYE is the evolutionary product of over twenty five years of Navy experience in airborne control systems, and it remains for its type the world's criterion system. The HAWKEYE is a vital partner of the F-14 in the maritime air superiority environment, and it plays an essential role in the coordination of all airwing missions. This uniquely capable platform has both active and passive electronic systems, and it performs yeoman service as the eyes of the tactical commander.

The Battle Group's integral ASW capability resides in the S-3 VIKING aboard our carriers and our LAMPS helicopters aboard surface combatants. Complemented by the P-3C ORION with the UPDATE III modification in the outer-zone ASW role, I am confident that we are well on our way to achieving at least parity with the emerging submarine threat.

Finally, this budget ensures that our airwings will continue to be supported by the KA-6 tankers, and reconnaissance equipped aircraft, and replenished by our improved C-2A carrier-on-board delivery aircraft. With the fiscal year 1983 budget submitted for your approval, we will continue to put to sea a force capable of convincing potential adversaries that predictable losses from military action will far exceed any expected gains.

COSTS

Despite increased funding allocated to the defense budget, affordability will continue to be a crucial issue in improving Naval Aviation. We will, of necessity, continue to prioritize our allocation of funds and procure austere systems rather than the higher cost options that we might like to have. My most critical task will continue to be the funding of systems that offer the highest payoff while doing so within allocated fiscal ceilings. That requirement frequently leads to funding of upgrades of current aircraft rather than procurement of new systems. Upgrades that produce improved reliability and maintainability for better readiness while yielding greater capability will receive my highest priority.

One of the most cost effective methods of achieving more bang-for-the-buck is realized through our Aircraft Modification Program, funded in Budget Activity 5. When fiscal contraints preclude new aircraft procurement, it is even more essential that we continue to improve our weaponry through this program. In the fiscal 1983 budget, funds are requested for approximately 240 individual improvements to our aircraft. They are broadly catagorized in force groupings:

- Readiness Modifications: which improve reliability and maintainability, or correct deficiencies that make the aircraft difficult to support.
- Safety Modifications: which correct design deficiencies that contribute to unsafe aircraft operations.
- Capability Modifications: which upgrade the capability of the weapon systems to keep abreast of emerging threats.
- Force Level Modifications: which perform Service Life Extension (SLEP) or Conversion-in-Lieu-of-Procurement (CILOP) to help maintain the required member of aircraft in active service.

While each of the 242 program falls in one or the other of these categories, virtually all have more than one of the above qualities inherent in the them.

I have already highlighted the improvement in spares funding that we predict will correct most of our readiness deficiencies. Other support funding in aviation ground equipment and rework facilities support are corrillaries of spares funding in improving the readiness of our forces. There are also funds requested in the Other Procurement, Navy account for armament and weapon support equipment which are in critically short supply especially with the addition of more AV-8B and F/A-18 aircraft in the fiscal year 1983 budget.

Another cost-effective effort is improved safety, which not only saves aircraft and thus money, but, more importantly, saves irreplacable lives. We have made great strides in this area recently and would call to your attention that 1981 was, by far, the best aviation safety year to date. A comparision of 1981 with 1980 statistics reveals a 9% reduction in lives lost and a savings of 25

aircraft. Based on an average cost of $30 million per combat aircraft, this represents a one-year cost avoidance savings in aircraft alone of approximately $750 million.

FORCE LEVELS

Last year, I stated that our current force structure was at an absolute minimum and that any further inventory reductions would reduce our ability to conduct significant operations at sea. The actions of the Congress, and this committee on that request, were indeed instrumental in turning this perception of concern into one of optimism.

I am sure that my efforts to articulate the Navy's needs to acquire aircraft in adequate numbers to achieve and maintain our inventory objectives are very similar to those of my contempories in the Air Force and the U.S. Army. But for the first two years in my assignment, I truthfully found we had been constrained from doing so by limits to our spending authority. Last year there was a significant breakthrough with the procurement of 287 aircraft, but you must recognize that this was heavily weighted with less expensive training aircraft needed to increase our lagging pilot training inventory. The budget before you has 288 aircraft but includes increased procurement of front-line aircraft such as the AV-8B, F/A-18 and SH-60B with their high initial investment costs. While this procurement level is still short of the 324 aircraft we must have a fill current airwings, and well short of the 349 we estimate will be required for 15 carrier battle groups, I feel we are continuing to make progress toward our force level goals. The budget before you shows naval aviation on the way back from the severe deficit it faced in previous years.

I would like to explain how we have arrived at our requirement for the procurement of approximately 330 per year. This exhibit displays, by community, the long term average annual inventory reductions that we project each year in the course of operating the present forces comprised of twelve carrier airwings, three Marine airwings, the current land based patrol force, and the associated support, training and Reserve forces.

COMMUNITY	ANNUAL ESTIMATED ATTRITION	ATTRITION PLUS RETIREMENTS PER YEAR
TACAIR		
o VF/VA	66	150
o ASW	2	8
o AEW	1	5
HELICOPTERS	23	75
PATROL	2	16
SUPPORT	3	16
TRAINING		
o JET	9	31
o PROP/HELO	4	14
LAMPS	4	9
TOTAL	114	324*

* This total is based on 12 carrier airwings and will incrementally increase to 349 as the force grows to 15 carrier airwings in the 1990s.

I would like to emphasize that the these numbers represent approximate long term averages. Year by year attrition and retirement estimates, which reflect our most current historical data and planning factors, will flucutate somewhat from the long term average.

At this time, we are reasonably satisfied with our balanced approach to maintaining force levels--procure essential new aircraft and fix-what-we-have--but we recognize clearly its shortcomings. Specifically, we are asset limited--having completed a SLEP or CILOP on a large percentage of the inventory--leaving us with few remaining candidates. The other major problem inherent in SLEP or CILOP is the resulting increase in the average age of a specific type aircraft, and its corresponding obsolescence.

In concluding, I believe that the individual aircraft that form our naval air forces today are extremely capable and will hold their own against any threat in carrying out their mission. While improved force effectiveness and adequate numbers of aircraft are essential to achieving maritime superiority, readiness remains the vital key. Our aircraft and weapons systems must be available--that means spare parts, repair capabilities and built-in reliability on the order of the F/A-18, and continued modifications to existing systems that increase their reliability and enhance their maintainability.

We have the basic ingredients. I echo the CNO's words in his posture statement when he said, "The future of Naval Aviation is

bright and we should continue to dominate the air for the remainder of the decade and beyond." I totally support that view but with it goes the implied responsibility to sustain our efforts to provide the necessary cohesive links to permit carrier battle groups and naval aviation as a whole to retain their unchallangeable position on the seas of the world. Naval Aviation, like the Navy as a whole is on the move. I am convinced that we are significantly more capable today than we were two years ago.

The following detailed descriptive summaries of each program represented in the fiscal year 1983 budget request are submitted for the committee's cognizance:

AIRCRAFT PROCUREMENT (B.A. 1-4)

A-6 INTRUDER

The INTRUDER is the only medium attack carrier-based aircraft in the U.S. inventory equipped for locating and striking fixed or moving targets, day or night, even in inclement weather. The aircraft is particularly well-suited for the war-at-sea, power projection, and close air support roles of the Navy and Marine Corps attack mission.

The INTRUDER has been in the inventory for over two decades, but its age belies its central role in present day naval aviation. The aircraft has been constantly improved and modernized throughout its years of service and remains one of today's most versatile and capable attack aircraft. In new production aircraft, and through modification of existing aircraft, the present multi-mode radar, high-speed computer, and inertial navigation systems are integrated with the Target Recognition Attack Multisensor (TRAM) capability (integrating Forward Looking Infra-Red (FLIR), a combination laser designator/ranger, and a Forward Air Controller (FAC) laser energy receiver) to provide significantly improved bombing accuracy and target locating capability. This integrated system provides the flight crew with a radar display for longer range target acquisition and a shorter range TV-like FLIR picture of target detail, and has substantially contributed to our ability to monitor shipping and detect of potential threats to U.S. ships in the Indian Ocean and

elsewhere. Weapons delivery accuracy is greatly improved in the TRAM configured INTRUDER through the use of FLIR for precise aimpoint selection and laser ranging, and by on-board target designation for use with laser-guided weapons.

To further increase the flexibility and tactical versatility of the INTRUDER, we have integrated the HARPOON standoff missile system to this aircraft. This combination was first deployed in 1981. A program is underway to integrate the HARM anti-radiation missile system, and an integrated missile panel will be developed to providecommon control for HARM and for other standoff weapons which are programmed to be incorporated into the system in the next few years for increased effectiveness and survivability.

The $261.0 million requested in fiscal year 1983 provides funding for procurement of eight aircraft and advance procurement for eight aircraft in fiscal year 1984. In addition, initial spares funding of $15.6 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost for the A-6E is $24.6 million.

EA-6B PROWLER

The EA-6B PROWLER operates in one of the most complex, demanding and dynamic environments in modern operations: electronic warfare (EW). The PROWLER is dedicated to tactical airborne EW; its crews have no additional missions. They work solely in the EW scenario and become highly skilled in its disciplines--I believe they are the best in the world.

The PROWLER is extremely flexible and fully capable of both active and passive EW support at sea and over land. The importance of our EW countermeasures support can be testified to by any Navy pilot who has flown in hostile areas with intense radar threats. Routine peacetime missions include passive electronic surveillance and active warfare training for friendly forces.

Because of the dynamic nature of electronic warfare, the PROWLER's avionics suite has progressed through three generations, and a fourth improved version is under development. To ensure compatability, commonality, and mission capability, all of the earliest EA-6B "Standard" version aircraft were modified to the

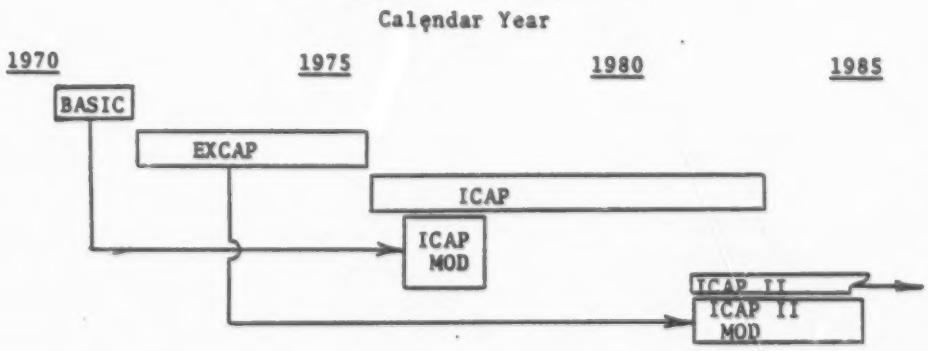
latest production configuration--"Improved Capability," or ICAP. This modification effort was completed in March 1979.

The ICAP system improved greatly the receiving, processing and operator display subsystems of the tactical jamming system. ICAP configured EA-6B production began in 1976, and the first ICAP squadron deployed in late 1977. Our operational commanders report that the ICAP aircraft has substantially improved EW capabilities and readiness.

The fourth generation EA-6B avionics suite is presently in development with an IOC in fiscal 1982. This new version, ICAP II, will build on the present ICAP system and will capitalize on technological advances resulting from the U. S. Air Force's EF-111 development program.

The ICAP II program will be devoted primarily to the jammer portion of the system. ICAP II will provide the most effective tactical electronic warfare aircraft in the free world. The flexibility inherent in ICAP II will strengthen the Navy's ability to counter anticipated EW threats into the 1990s. All second generation PROWLERs--the "Expanded Capability" or EXCAP aircraft--will be converted to the ICAP II configuration. The following exhibit displays the evolution of the EA-6B System.

EA-6B WEAPON SYSTEM EVOLUTION



The successful execution of aerial missions in today's electronic threat environment requires a capable, flexible platform able to detect, analyze and suppress hostile detection and targeting systems. The successful suppression of opposing systems will provide an

acceptable degree of survivability for both airborne strike forces and ships at sea. The EA-6B PROWLER provides this essential service.

The present EA-6B force level does not meet the stated DON minimum force level required to combat the increasing proliferation of complex sophisticated air defense threat weapons system. In all wartime scenarios, including war-at-sea strikes, anti-air warfare (AAW), power projection ashore and anti-ship missile defense, the level of combined enemy threats to DON strike groups argue persuasively for a full complement of EW aircraft. Planned EA-6B procurement will support the commissioning of three additional EA-6B squadrons during the FYDP years.

In view of the limited current force levels, any Navy augmentation for USMC operations would be severely limited; therefore, USMC EA-6B requirements must be supported in their entirety and cannot be predicated on Navy support.

In Battle Group defense against anti-ship missiles, the EA-6B can jam certain radars, reduce the effectiveness of enemy air-to-surface missiles, and significantly enhance the effectiveness of Battle Group Defensive Electronic Countermeasures systems. The EA-6B is the dedicated DON tactical EW aircraft and is considered to be an integral and vital component of present and future Battle Group operations.

The fiscal year 1983 request includes $316.6 million for the production of six aircraft, and advance procurement of six aircraft in fiscal year 1984. In addition, initial spares funding in the amount of $30.5 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost for the EA-6B is $34.5 million.

AV-8B

The AV-8B fulfills the U. S. Marine Corps requirement for an advanced V/STOL attack aircraft for future force projection capability. This unique tactical aircraft will provide responsive close air support for the ground commander by combining the speed and firepower of a modern jet attack aircraft with exceptional basing flexibility.

The AV-8B combines the vectored thrust concept of the AV-8A with modern U. S. technology, incorporating a new wing with a

98-273 O—82——25

supercritical airfoil and positive circulation flaps to achieve high lift in short takeoff. Also contributing to performance are Simple Lift Improvement Devices (LIDS) to increase vertical lift and stability in ground effort, and a larger inlet to provide increased engine thrust. The major structural elements of the wing and forward fuselage are of strong, lightweight, advanced composite materials. A raised and somewhat enlarged cockpit is incorporated into a larger forward fuselage to improve pilot vision and provide additional space for a modern avionics system. The cockpit includes advanced avionics that provide greater weapon delivery accuracy, enhanced survivability, and reduced pilot workload. Reliability and maintainability improvements complement these changes.

The AV-8B has twice the payload/radius capability of the AV-8A. Seven weapons stations, four of which may also be used as fuel tank stations, and a fuselage-mounted 25mm gun are provided. The AV-8B has the capacity to carry both conventional and smart bombs, as well as standoff missiles, and can accurately deliver a weapon load of over 9,000 pounds. The performance of the AV-8B was fully validated by flight demonstrations with two YAV-8B prototype aircraft, and the first flight of the AV-8B was on November 5, 1981. In addition, over 6,200 hours of aerodynamic wind tunnel testing have been completed to date.

The fiscal year 1982 Research, Development, Test and Evaluation funding supports the completion of the four AV-8B full scale development aircraft, as well as the beginning of the flight test program. Initial flight testing will consist of McDonnell Douglas development tests, with Navy Preliminary Evaluation (NPE) starting in May 1982, and then being conducted periodically during the test program. Board of Inspection and Survey (BIS) trials and follow-on Navy Technical and Operational Evaluations (OPEVAL) complete the test data base. Full scale development testing is directed toward initiation of BIS trials in mid 1983, with an Initial Operational Capability (IOC) in September 1985.

The fiscal year 1983 request includes $751.0 million for the production of 18 aircraft and advance procurement for 30 aircraft in

fiscal year 1984. In addition, initial spares funding in the amount of $191.9 million is requested in fiscal year 1983. The flyaway unit cost for the AV-8B is $28.3 million.

F-14A TOMCAT

The F-14A TOMCAT is a surperb aircraft, with a uniquely capable and extremely lethal weapons system. The TOMCAT, with its integral PHOENIX missiles, is the only system in the Free World capable of successfully engaging the Soviet BACKFIRE bomber.

The long-range standoff capability of the PHOENIX is complemented by both SPARROW and SIDEWINDER missiles for midrange to close-in combat. And in addition to these capabilities, the TOMCAT also packs a high-rate of fire 20mm cannon. This array of weaponry gives the TOMCAT great versatility and depth as a fighter and interceptor.

One of the pivotal points in any aerial fighting system is the ability to locate, identify and track potential targets. The AWG-9 radar meets and exceeds our needs and expectations in this regard. But, even in the event of a failure of the AWG-9, the TOMCAT remains capable of successfully engaging its adversaries. The heat-seeking SIDEWINDER and the cannon, while enhanced by the AWG-9, are quite able to operate without any radar.

Sixteen F-14 squadrons have been deployed aboard our carriers, and the seventeenth and eighteenth squadrons are undergoing transition to the TOMCAT this year. The performance of the aircraft in operational situations has been highly satisfactory.

We are working diligently to redress the highly publicized readiness problems experienced in the past. There are three essential categories of problems affecting the TOMCAT's material readiness; specifically, they are engines, support and age.

The Pratt and Whitney TF-30P-412 engine problem developed early in 1975. Catastrophic failures of the engine resulted in the loss of several aircraft. We initiated an ambitious improvement program in fiscal year 1979. The final phase of the program, component replacement (-414A), will begin in 1982. The result will be a substantial improvement in survivability.

Our support posture over the past three years was less than optimum largely because of funding limits. We have addressed some of

the problems through the reprogramming of funds into support lines. Unfortunately, and largely because of the well-documented protracted production lead times, we will not see significant improvements in material readiness for the next few years. With respect to age, although we still consider the TOMCAT a new system, our initial production block aircraft are nearly ten years old. We have updated these aircraft twice, each time resulting in improved readiness. Each new block of production aircraft embodies significantly increased reliability and maintainability.

The TOMCAT continues to mature with evolutionary changes and improvements. Major projected long-range changes include a radar improvement, avionics upgrade, and the engine improvement program. Relatively minor changes currently ongoing are designed to improve combat readiness and safety of the flight in the near term. The modifications are proceeding at a slower rate than we would desire because of spending constraints, but we are proceeding with those we consider to be absolutely essential. We are continuing to work with the U. S. Air Force on a limited F-101X engine and common core development program. Presently, this program is a back-up to the TF-30 improvement program.

PHOENIX--VITAL PARTNER TO THE TOMCAT

The PHOENIX missile stands alone as the finest long range air-to-air missile in the world and can only be carried by the F-14. We have achieved an impressive success rate in PHOENIX firings from Navy TOMCATs. I emphasize Navy successes here because it reflects the fleet capabilities today: exercising the entire system from shipboard magazine storage to aircraft systems to the readiness of the aircrew launching the missile against an airborne target.

The TOMCAT/PHOENIX also have proven capability against fighters maneuvering at maximum capability at short range; extremely low altitude targets, including a simulated cruise missile; extremely high altitude aircraft; simulated air-to-surface missiles; and targets employing or being screened by electronics countermeasures.

The PHOENIX missile is undergoing an improvement program to increase its capabilities. Five major changes are being made to the AIM-54A to produce the AIM-54C. Analog circuitry is being replaced by digital systems to allow software programming for further growth. Stream raid discrimination, improved beam attack and improved rear quarter opening rate capabilities are being incorporated. Electronic Counter-Counter Measures (ECCM), longer range, very high altitude, and greater maneuvering target capabilities have also been added. Target detection and fuzing capabilities have been improved to provide small target, very low altitude, and chaff-to-main-target discrimination. Looking ahead, preliminary planning is already underway to develop a follow on PHOENIX type missile capable of much higher speeds and ranges for the threat of the 1990s.

The fiscal year 1983 request includes $1117.7 million for the production of 24 aircraft, and advance procurement of 30 aircraft in fiscal year 1984. In addition, initial spares funding in the amount of 60.9 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost for the F-14 is $38.0 million. Also included in the fiscal year 1983 is $256.3 million for procurement of 108 PHOENIX missiles and advance procurement of 360 in fiscal year 1984.

F/A-18 HORNET

The F/A-18 has been designed and developed as a highly versatile strike fighter to replace both the A-7 and F-4 aircraft currently in our inventory. It incorporates the most recent advances in weapon system technology in order to perform the fighter and ground attack missions for the Navy and Marine Corps. This program has received a heavy investment in reliability and maintainability features which promise dramatic improvements in tactical aviation readiness.

Evaluations conducted during the course of the HORNET development program have demonstrated the value to be derived from our investment. The F/A-18, now in the hands of our operating forces, is already demonstrating three times the reliability of the aircraft it replaces, and it is improving as we move along. The HORNET requires less than half the organizational-level maintenance effort required for the A-7 and F-4. The maintainability measure is also improving

as we gain experience with the aircraft, and the fleet personnel operating the HORNET, from the maintenance technicians to the pilots, are unanimously enthusiastic about the technical and tactical advances it represents.

The F/A-18 is demonstrating the degree of operational effectiveness and flexibility we established as goals in the design and development process. During training deployments this past November and January, over 95 percent of all scheduled sorties were flown. Every one of these training flights was flown with a full mission capable aircraft. Mean Flight Hours Between Failures was 2.8 hours (A-7 and F-4 values are 0.8 and 0.65, respectively). Direct Maintenance Manhours per Flight Hour averaged 13.5 (A-7 and F-4 values are 28 and 49, respectively).

Fighter performance has been demonstrated against a broad spectrum of adversaries. Turn rate, thrust-to-weight ratio, high angle of attack flying qualities and weapon system advantages of the HORNET have combined to overwhelm each and every opponent whether the encounter was one versus one, or in a variety of combinations. The flights have been conducted on instrumented ranges and the results are fully documented and avialable for critical analysis.

Air-to-ground system development is still in progress at the Naval Air Test Center. An air-to-ground deployment by our fleet replacement squadron is scheduled for next month. We have every confidence that the HORNET will demonstrate superior capability in its ground attack role. Flutter testing with various combinations of weapons and external stores has disclosed no need for speed restrictions, and the radar is meeting or exceeding every specification requirement.

All known technical issues associated with the HORNET have been resolved. We are more confident than ever that the F/A-18 will totally fulfill the expectations we had for the aircraft when it was proposed to replace the A-7 and F-4. The fiscal year 1983 request includes $2727.6 million for the production of 84 aircraft, and advance procurement for 96 aircraft in fiscal year 1984. In addition, initial spares funding of $119.8 million is requested in

fiscal year 1983. The fiscal year 1983 flyaway unit cost for the F/A-18 is $25.1 million.

CH-53E SUPER STALLION

The CH-53E SUPER STALLION helicopter is the most capable heavy-lift helicopter in the free world. The SUPER STALLION meets or exceeds all of its performance specifications, and it will satisfy the spectrum of both Navy and Marine Corps heavylift helicopter needs through the end of this century.

THE NAVY MISSION

The Navy will use the SUPER STALLION primarily in the fleet logistic support role. The aircraft is particularly well suited to this mission. It is capable of transporting a 16-ton external payload to a 50 nautical mile mission radius, or an 8-ton payload to a range of 500 nautical miles. In the Vertical Onboard Delivery capacity, the CH-53E is able to provide logistic support to ships not in company with an aircraft carrier. This amounts to about 72 percent of our combatants. Additionally, the CH-53E is capable of movement of priority containerized cargo, removal of damaged aircraft, movement of Mobile Construction Batallion equipment and the transportation of special weapons.

The MH-53E also will be employed in the airborne mine countermeasures mission. The greatly increased power and capability of the SUPER STALLION will make it safer and more cost-effective than the present RH-53D aircraft. Introduction of the MH-53E is planned for 1986.

THE MARINE CORPS MISSION

The SUPER STALLION satisfies the long-established requirement for a fully capable Marine Corps heavylift helicopter. Our Marines will use the CH-53E in five fundamental mission roles.

Foremost among these missions will be the rapid movement of large numbers of combat troops, as well as their heavy weapons and equipment. The ability of the Battlefield Commander to redeploy his forces very quickly, over great distances if need be, through the use of this aircraft can significantly influence the outcome of an engagement.

The SUPER STALLION will increase by about 57 percent the number of pieces of mission-essential heavy combat equipment that may be helo transported. By heavy, I mean equipment weighing over two and one half tons.

The CH-53E is able to lift every tactical aircraft in the Marine Corps inventory--including another CH-53E. This enormous lift capability will allow the Battlefield Commander to move heavy equipment or remove damaged or threatened aircraft.

The Marines will employ the CH-53E in support of highly mobile V/STOL sites. The SUPER STALLION can move support equipment, deck matting, ordnance, and even maintenance vans to support forward-based HARRIERS.

Initial introduction of the CH-53E this past year has been highly successful. The second Marine Squadron was established in December 1981, and will receive its first aircraft in February 1982 -- on schedule. All reports of fleet experience with the aircraft have been favorable.

The fiscal year 1983 request will include $289.1 million for the production of 11 aircraft, and the advance procurement of 11 aircraft in fiscal year 1984. In addition, initial spares funding in the amount of $21.9 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost for the CH-53E is $19.6 million.

AH-1T SEA COBRA

The AH-1T is a tandem seat, two place (pilot and gunner/copilot) attack helicopter designed and built to provide the high speed and maneuverability required by the attack mission. The model designation AH-1T was approved during August 1975 for those aircraft formerly referred to as AH-1J Improved. The AH-1J is equipped with an uprated twin-pack engine (T-400-WV-402), and uprated dynamic components. With a maximum gross weight of 14,000 lbs., (vice 10,000 for the AH-1J) and marked increase in life capability, the AH-1T carries a significantly greater ordinance payload. The armament of the AH-1T includes the Army's Hellfire and the TOW missile systems, the AIM-9 missile, a chin-mounted 20 mm turret gun, and a wide variety of forward firing and droppable external stores.

The fiscal year 1983 request includes $17.2 million for advance procurement of 22 aircraft in fiscal year 1984.

SH-60B SEAHAWK

The SH-60B SEAHAWK is the airborne sub-system of the Light Airborne Multi-Purpose System (LAMPS) MK III scheduled for installation in FFG-7, DD-963, CG-47 and DDG-993 class ships. The total LAMPS MK III system includes the SH-60B, the ship electronics, the helicopter landing system, and helicopter support facilities. LAMPS III is a computer-integrated, ship-helicopter combat system that greatly increases the flexibility, fighting reach and effectiveness of surface combatants.

The LAMPS MK III is optimized for Anti-Submarine Warfare (ASW), but has, as well, a secondary mission of Anti-Ship Surveillance and Targeting (ASST).

The SEAHAWK is a derivative of the Army BLACK HAWK Helicopter. It will carry a crew of three, approximately 2000 pounds of integral mission avionics, and will have provisions for sonobuoys and MK-46 torpedoes.

The first SEAHAWK flew in December 1979. Weapon system integration, weapon system flights, SEAHAWK/FFG-7 interface tests, Navy technical evaluation, and preliminary operational testing were completed successfully in 1980 and 1981. The aircraft has flown over 2600 accident free flight hours and has made over 1000 at-sea landings aboard the USS MCINERNEY (FFG-8). The Navy's final at-sea operational evaluation was completed early this year. A review of all technical and operational testing to date has shown that the aircraft has met all of its performance specifications; there are no major technical problems with SEAHAWK.

The fiscal year 1983 request includes $995.4 million for the production of 48 aircraft, and advance procurement of 64 aircraft in fiscal year 1984. In addition, initial spares funding in the amount of $236.2 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost of the SH-60B is $14.4 million.

P-3C ORION

The P-3C ORION has been in production since 1969 and has enjoyed an evolutionary development of its sensor systems through the Update

program. This airplane is acclaimed as the world's foremost maritime patrol aircraft and is in great demand by our allies seeking to replace their lesser capable maritime air patrol fleets. In international crises, the P-3's play a vital role in the Navy's rapid response to an ocean area and will be critical in the event of a major conflict in the detection and destruction of enemy submarines, while also providing harassment of enemy shipping and surface fleets.

In January, the P-3C Update III completed a highly successful operational evaluation. This latest improvement to the P-3C adds the PROTEUS Advanced Signal Processor system which will significantly improve the ORION's ability to detect and track the quieter new generation Soviet subs. PROTEUS is the most advanced acoustic system in existence and is planned to be used in the S-3 Weapons System Improvement Program, the SH-60 LAMPS MK III, as well as being used on a number of surface ships and submarines. The system is not only the most sensitive in existence, but has the built-in flexibility to allow the P-3 and other platforms to adapt easily to handle advanced sensors now under development. The P-3C Update III is planned for production in November 1982 and will enter fleet service in May 1984.

In 1977, we started production of the P-3C Update II's which equipped the P-3's for the first time with the HARPOON an over-the-horizon, air-to-surface missile. Since that time, we have also initiated a HARPOON backfit program and plan to have all active fleet P-3's equipped to employ the missile by early 1985. This will give the Navy a world-wide responsive, anti-surface capability to handle the rapidly growing Soviet "blue water" fleet.

Another significant improvement planned for the P-3's both in production and retrofit, is the Infrared Detection Set (IRDS). This superb sensor allows the P-3 crews to identify surface targets day or night. This capability is particularly important in the dense shipping regions such as the Mediterranean Sea, Sea of Japan, and South China Sea where submarines frequently operate on the surface at night.

The Navy's goal is to achieve an all P-3C active fleet by the late 1980's or early 1990's. Presently there are eighteen of the twenty four active fleet squadrons flying P-3C's. In addition, eight

other nations fly the ORION aircraft, with the Dutch Navy currently taking delivery of the latest version, the P-3C Update II. As we introduce the new model P-3C's into the active fleet, the older but modernized P-3B planes will migrate to the Reserve squadrons.

In fiscal year 1983, the budget plans procurement of six P-3C aircraft and funds for continued system improvements to match the rapidly improving Soviet Naval Forces. The major upgrades for the P-3C are a new Electronic Support Measures (ESM) system, new communications system (fleet satellite communications), an improved radar for stand-off classification of surface targets and better periscope detection, and an improved acoustic sensor/localization system. The request also includes funds to maintain a modern Reserve P-3 fleet to deter the very large Soviet submarine threat. Among the more significant Reserve P-3 modifications are:

- o Infrared Detection Sets
- o DICASS and triple vernier modification of the AQA-7
- o HARPOON air-to-surface cruise missile systems
- o Secure HF voice (Parkhill)
- o Improved ESM for the HARPOON equipped P-3B's

The fiscal year 1983 includes 329.4 million for the production of six aircraft, and advance procurement of five aircraft in fiscal year 1984. Additionally, $12.4 million is requested for initial spares funding. The fiscal year 1983 flyaway unit cost for the P-3C is $39.1 million.

E-2C HAWKEYE

The E-2C is the latest of the E-2 family of carrier-based, twin turboprop, airborne early warning (AEW) and control aircraft. The HAWKEYE is equipped with an Airborne Tactical Data System (ATDS), incorporating both active and passive sensors and provides real time computer-derived threat warning and tactical analysis to the Task Force Commander. In addition to its primary mission of early warning and fighter control, the HAWKEYE fulfills a vital role in almost every facet of Navy tactical air operations, including surface surveillance coordination, strike force control, search and rescue and air traffic control. The E-2C's Passive Detection System (PDS) and overland radar

detection capability represent a quantum improvement over previous AEW systems.

The E-2C HAWKEYE attained final acceptance for service use in December 1975 and now is being operated by ten of the Navy's twelve carrier-based AEW squadrons and the Fleet Readiness Training Squadrons at Norfolk, Virginia, and San Diego, California. Numerous highly successful deployments have been completed to date, including deployments to the Indian Ocean.

The Advanced Radar Processing System (ARPS) modification to the E-2C's radar is now being incorporated in all production aircraft. The first ARPS configured E-2C was delivered in December 1976. Procurement of 31 retrofit kits for earlier production E-2Cs was initiated in fiscal year 1977 and installation was begun in 1979. ARPS provides significant radar anti-jam capability, as well as automatic overland detection and increased small target detection range. The system successfully completed Navy Technical Evaluation in September 1977 and Operational Evaluation in April 1978. The ARPS was granted Approval for Service Use (ASU) in September 1978 and deployment of the first fully equipped ARPS squadron occurred in October 1978. Presently, seven of the twelve fleet squadrons (six Atlantic Fleet and one Pacific Fleet) are ARPS equipped. Pacific Fleet ARPS transition started in mid-1981. Future improvements will include incorporation of a Total Radiation Aperture Control Antenna (TRAC-A), Extended Radar Range, High Speed Data Processing capability and additional computer capacity.

Foreign Military Sales include four E-2C ARPS aircraft for the Israeli Air Force (IAF) in 1978 and eight E-2C ARPS aircraft for the Japanese Air Self Defense Force (JASDF) concurrent with the USN fiscal year 1981 and 1983 procurement. Japan has expressed its intent to buy additional E-2Cs in the future.

The fiscal year 1983 request includes $337.5 million for the production of six aircraft in fiscal year 1983, and advance procurement of six aircraft in fiscal year 1984. In addition, initial spares funding in the amount of $15.2 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost of the E-2C is 36.1 million.

SH-2F LAMPS MK I

The SH-2F LAMPS MK I has been operational since the early 1970's. LAMPS MK I has accumulated over 185,000 flight hours including day, night, and all-weather conditions, and over 75,000 landings on ships at sea.

The LAMPS MK I weapon system is a SH-2F helicopter, built by Kaman, deployed aboard FF 1040 and FF 1052 frigates in the primary role of anti-submarine warfare (ASW). The SH-2F is primarily a reactionary vehicle that responds to submarine contacts gained by the parent ship, other ships in the force, or other ASW aircraft. The aircraft-to-ship data link is used to transmit acoustic information to the ship's combat information center for processing. The LAMPS aircraft has an onboard capability to re-detect and classify and attack enemy submarines.

Plans are to continue operating the SH-2F into the late 1990's to cover the FF 1040's and FF 1052's until they are retired; and to cover the MARK I configured DD 963's, FFG 7's and CG 47's until the LAMPS MK III is in the fleet. The latter ships will be backfitted to accomodate the LAMPS MK III system.

The fiscal year 1983 request includes $189.4 million for the production of 18 aircraft, and advance procurement for 18 aircraft in fiscal year 1983. In addition, initial spares funding in the amount of $15.7 million is requested in fiscal year 1983. The fiscal year 1983 flyaway unit cost of the SH-2F is $9.8 million.

C-9B SKYTRAIN II

The C-9B is an FAA certified, commercial, off-the-shelf, twin jet transport aircraft built by the McDonnell Douglas Corporation. The C-9B is basically a DC-9-32F series aircraft which has been modified to meet the Navy's organic cargo passenger airlift requirement. The Navy and Marines have a combined total of 15 C-9B aircraft with a projected delivery of two additional aircraft in FY-83.
These aircraft provide short notice airlift for various planned and unplanned USN/R requirements which are time constrained or uneconomical to move by commercial or MAC airlift. The aircraft is a highly reliable and easily maintained by Naval personnel at the organization level and by contractor personnel at the intermediate

and depot levels. The C-9B aircraft is a replacement for the obsolete Douglas built C-118B aircraft which were purchased in 1951. The fiscal year 1983 budget request includes $16.2 million for the procurement of used C-9 aircraft. That amount is based on the anticipated cost for two used C-9's.

C-2 COD

The Navy's unique requirement for carrier-operable logistic aircraft is well known and, I believe, universally endorsed.

One of the pivot points of our ability to conduct sustained, meaningful operations in remote regions is our ability to replenish our ships underway. The bulk of our provisions--food, parts, ammunition and, of course, fuel--are carried to our ships of the line by supply vessels. What gives our system its depth, and its ability to answer supply demands quickly, is our fleet of COD/VOD aircraft. At present, our fleet of COD/VOD aircraft is stretched very thin, and many of our aircraft are unable to meet the demands of a three-ocean commitment. We are augmenting our COD force in the Indian Ocean with a single, heavily oversubscribed US-3A aircraft. Through reprogramming actions approved by the Congress in fiscal years 1979 and 1980, together with a reprogramming request presently before the Congress, we plan to increase our US-3A inventory to four aircraft. Two more US-3A aircraft will be converted this year for a total inventory of six.

Together with the C-2 COD aircraft and our VOD assets, our ability to resupply our ships at sea will be greatly enhanced and satisfactorily respond to the needs of the fleet. In the meantime, our C-1 aircraft are very old; they are powered by reciprocating engines requiring high octane fuel. For safety reasons, we have removed that fuel from our carriers. That means these airplanes cannot be refueled on-board.

The Navy's decision to procure an improved C-2 COD aircraft was made based on two essential factors. The first was time: we will receive the first new C-2 aircraft in late 1985 or early 1986. That delivery would be delayed a year or more by a competitive procurement program. The second factor was cost: it was clear that the aircraft

that would best meet our basic needs for the lowest unit cost would be the improved C-2.

These C-2s will embody several airframe and engine improvements currently in our E-2C aircraft. The engines will be improved versions of the more powerful and extremely reliable T-56. We also will include some very significant improvements in corrosion resistance techniques. Those technologies were proven in the E-2C aircraft and represent the state-of-the-art in that critical discipline.

A multi-year procurement contract which should result in savings currently estimated at $58 million on the total buy of 39 aircraft was signed earlier this year.

The fiscal year 1983 request includes $267.8 million for the production of eight aircraft and advance procurement of eight aircraft in fiscal year 1984. In addition, initial spares funding of $17.1 million is requested for fiscal year 1983. The fiscal year 1983 flyaway unit cost is $27.9 million.

T-34C MENTOR

The T-34C is the Navy's primary and basic flight training aircraft. All of our student pilots learn their basic flying skills in the T-34C before moving on to more advanced types of aircraft. We first introduced the T-34C in 1976 to begin replacing our inventory of obsolete, reciprocating engine powered T-34B and T-28 aircraft. We now own some 173 T-34Cs, but still have had to keep over 100 T-28s in service to meet our training requirements. The T-28 is a 1950 vintage aircraft and is now extremly difficult to operate and maintain. When deliveries of our fiscal year 1981 and 1982 lots have been received by late 1985, we should be able to retire all remaining T-28s.

The 30 T-34C aircraft requested in fiscal year 1983 will add additional aircraft to our program to meet a projected increase in the demand for new pilots in the mid-late 1980s, build up our pipeline inventory, and begin to build the number of attrition aircraft needed to keep an adequate force level through the 1990s.

The fiscal year 1983 request includes $34.4 million for a total

of 30 aircraft. The fiscal year 1983 flyaway cost for the T-34C is $.9 million.

TH-57 SEA RANGER

The TH-57 SEA RANGER is the Navy trainer version of the commercial Model 206 Jet Ranger built by Bell Helicopter Company. After a competition, the Navy purchased 40 of these FAA-certified, off-the-shelf aircraft in 1968 for use as basic trainers. We have been very satisfied with the TH-57's high productivity, reliability and its low operating cost.

The Jet Ranger is still in production and thousands of these helicopters are in current service in both the Army and civil aviation.

Last year, when faced with the necessity to replace our aging H-1 trainers and, also, to meet expanding helicopter pilot training requirements through the 1980s, we determined that our most advantageous course of action was to acquire additional TH-57s and standardize our program with a single-type aircraft. Our program for fiscal years 1981 and 1982 is for 62 new TH-57s, seven of which have already been delivered with the remainder scheduled for later this year and calendar year 1983. Beyond that, we will still require another 42 to achieve program goals.

The fiscal year 1983 request includes $23.2 million for a total of 21 aircraft and associated simulators. The fiscal year 1983 flyaway unit cost for the TH-57 is $.6 million.

EC-130Q TACAMO-HERCULES/ECX

The EC-130Q is a highly specialized configuration of the basic C-130 HERCULES aircraft. In the "TACAMO" configuration, these aircraft are outfitted with a unique communications system.

The Atlantic TACAMO system has been operational for sixteen years, with a mission to maintain a 100% airborne guard capability for over eight years. The the EC-130 aircraft has been taxed to its limit through sustained operations at an unusually high utilization rate. The result is a fast aging aircraft and increased support costs, associated with the program.

For most of its history, TACAMO has been an interim system, a gap-filler to serve until a permanent, land-based, fully capable

system could become operational. Recently, it has become clear that TACAMO must be retained as an essential element in the National Command Communications structure for the foreseeable future. Not only that, but the demands for operability and capability which are now being placed on TACAMO far exceed anything envisioned when the program was first structured with the C-130 as the airborne platform in the mid-1960s. Over the past several years, the Navy has taken a long, hard look at the evolving TACAMO requirement and has determined that only through a drastic departure from the original program structure can we ensure that essential mission parameters will be met in the future. Accordingly, we have decided to cease procurement of C-130 replacement aircraft and initiate a competitive program for a new air vehicle which we have designated ECX. Fiscal years 1983 through 1987 are development years for ECX. Envisioned is a derivative of some existing vehicle which has the capacity to carry the TACAMO mission equipment with the speed, range, altitude, endurance performance, and growth potential necessary to meet the prescribed system operability goals of the late 1980s and beyond.

For fiscal year 1983, therefore, our request for EC-130 procurement will be limited to acquisition of two TACAMO communications suites. These mission suites will equip the two C-130 aircraft purchased in fiscal year 1981. When equipped and delivered, these two EC-130Q aircraft will be added to the force as mission operability inventory assurance aircraft during the ECX transition period in the mid-late 1980s, rather than replacing retiring older EC-130s as originally planned.

The fiscal year 1983 request includes $36.8 million for the purchase of these two mission communication suites for two existing EC-130Q aircraft. Also reflected in the budget request is $159.0 million in fiscal year 1984 for advance procurement of ECX.

AIRCRAFT MODIFICATIONS (B.A.5)

The Aircraft Modification Program, also known as the Operational and Safety Improvement Program (OSIP), funds incorporation of technical improvements which provide the most expeditious and cost-effective method of responding to the fleet's near-term requirements for improved readiness and capability to meet emerging threats. The

$1311.1 million requested for the aircraft modification program is divisible into four major categories: Readiness, Force Level, Safety, and Capability modifications. However, virtually all modifications include more than one of these facets in them.

- Readiness modifications include operationally "required" changes (i. e., not mission flyable without them), modifications to increase reliability and maintainability, and changes designed to reduce support costs and repair time (sustainability). This category accounts for $671.2 million in fiscal year 1983.
- Force Level modifications are driven by the necessity to maintain required numbers of operational assets without adequate new aircraft procurement. This category includes CILOP (Conversion in Lieu of Procurement)--considerably improved capabilities in many areas or conversion of an existing aircraft platform to a new mission (quite often to meet expanding threats) and SLEP, (Service Life Extension Program). This category accounts for $112.2 million in fiscal year 1983.
- Safety modifications are those that pertain to the reduction of aircrew/aircraft attrition in both peacetime and wartime environments. This category accounts for $61.3 million in fiscal year 1983.
- Capability modifications consist of weapons systems and avionics changes to meet new threats, or to enable better peformance of the aircraft's designated mission. This category accounts for $466.4 million in fiscal year 1983.

Some of the more significant modification programs are: the H-46 Safety, Reliability and Maintainability update program which replaces some airframe structures and integral components, thereby assuring a maintainable aircraft into the mid-1990s; the Rewing program for A-6 aircraft approaching their fatigue life limit, which approximately doubles the original service life estimates of the aircraft; the A-7E Forward Looking Infrared (FLIR) program that provides the A-7E a first-pass visual attack capability at night with a bombing accuracy twice that which can be achieved by radar weapon delivery; a TF-30-P414A Component Improvement Program for the F-14 engine to resolve engine problems resulting from exposure to a more demanding environment than originally anticipated--included will be repairs/

reworks/redesigns for a low time Low Cycle Fatigue (LCF) parts replacement, for engine stall improvement items, and for improved durability, reliability, and maintainability items; and an E-2 ALR-59 Passive Detection System Improvement, that encompasses an expansion of the memory as well as internal change to permit additional required software functions to counter changes in the nature of the threat since the original Passive Detection System was designed.

New starts in fiscal year 1983 include the ALR-67 Radar Warning Receiver, which provides detection and direction finding (DF) coverage for radar frequency emissions used for target tracking and missile control and is the replacement for outdated ALR-45 and ALR-50 Radar and Missile Warning equipment in certain tactical aircraft; the SH-3 Service Life Extension/Update Program, which addresses only items that are unreliable or severely degraded, and which will extend the service life of the SH-3H ten years; and a new antenna and interfacing hardware for the E-2C radar, which will reduce the radar's sidelobes and permit the E-2C to keep pace with the jamming threat.

AIRCRAFT SPARES (B.A. 6)

Aircraft spares availability is an essential element for aircraft material readiness. Procurement of spares is divided into two major categories: initial and replenishment spares.

- Initial spares support the introduction of new aircraft and weapons systems. They provide for operating site allowances, as well as the supply pipeline to support the weapon system while actual operating usage experience is being obtained. This operational demand development doesn't reach maturity until approximately 18 months after the initial Navy support date.
- Replenishment spares are procured to support weapon systems that have experienced usage requirements, and they provide replacement for attrition, increased site allowance, and other follow-on spares support needs.

The increase in funding for aircraft spares procurement, from approximately $500 million in FY-78 to the current level of $2.0 billion, reflects our emphasis on this facet of air warfare readiness and sustainability.

The funding request for aircraft spares in fiscal year 1983 is $2080 million; $932 million for initial spares and $1148 million for replenishment spares.

AIRCRAFT SUPPORT EQUIPMENT AND FACILITIES (B.A. 7)

Funding in the amount of $480.0 million is requested for fiscal year 1983. These funds will be used to continue the following four programs: Common Ground Equipment, $415.2 million; Aircraft Industrial Facilities, $24.4 million; War Consumables, $9.3 million; and Other Production Charges, $31.1 million.

Common Ground Equipment ($415.2 million)

The equipments included in this category are common to multiple types of aircraft or to aircraft that are out of production. CGE funds are used to acquire such diverse hardware as Automatic Test Equipment (ATE), certain training equipment, aircraft common ground support equipment, and Inventory Control Point (ICP) managed Ground Support Equipment. The funds will permit the procurement of totally new equipment to support new and highly complex airborne systems as well as replacement items to ensure acceptably high levels of service, test and maintenance support of existing systems.

These fiscal resources are crucial to the achievement of aviation support equipment standardization goals. The items procured with these funds have broad application to all new weapon systems (e.g., F/A-18 and SH-60B), to obviate procurement of a variety of unique equipment, peculiar to each new weapon system. Cost, logistic support, and operational benefits dictate the procurement and use of more common/multi-purpose support equipment in lieu of unique single-purpose items. The fiscal year 1983 request will allow the execution of an aggressive standardization program to meet advanced and existing weapons system support requirements.

Aircraft Industrial Facilities ($24.4 million)

The funds requested for fiscal year 1983 support calibration equipment, $16.8 million; and contractor facilities, $7.6 million.

The calibration equipments provide the means by which fleet Ground Support Equipment (GSE) is tested and adjusted to ensure accuracy and full operational capability. The GSE, in turn, is used to operate, test and maintain fleet prime weapons systems to ensure

that they meet their operational readiness, mission effectivsness, flight safety and personnel safety standards.

The Contractor Facilities funds will provide capital maintenance, modernization, improvements, emergency repairs and fire protection for government-owned aircraft production plants. These projects apply to the Naval Weapons Industrial Reserve Plants (NWIRPs) at Bloomfield, Connecticut; Columbus, Ohio; Dallas, Texas; and Bethpage, New York. The funds also support replacement or restoration and capital maintenance of government-owned production equipment used in Navy programs, and procurement of additional production facilities to support and/or expand programs for new weapons systems that are not supported by the private sector. Among the latter is the sound-suppression facility at NWIRP Calverton, New York.

War Consumables ($9.3 million)

The present budget request funds the procurement of bomb racks, Multiple Ejection Racks/Triple Ejection Racks adapter kits, external fuel tanks, and similar equipment. Historically, these external stores have high attrition in combat operations.

Other Production Charges ($31.1 million)

The funds requested for fiscal year 1983 include $15.5 million for Government Furnished Equipment (GFE) production support. Production support includes, among other things, repair of damaged or defective GFE, procurement of Navy Stock Fund items associated with fleet installation of modification kits, and testing services.

The funds also will support the procurement of certain Navy avionics equipment for installation in Coast Guard aircraft ($3.7 million), and the procurement of reconnaissance and other aerial cameras ($6.9 million).

STATEMENT OF LT. GEN. WILLIAM J. WHITE, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF FOR AVIATION

General WHITE. Mr. Chairman and distinguished members of the committee, let me begin by saying it is again a privilege to have this opportunity to address the status of Marine aviation. I am pleased to be able to report that since our last hearing we have made substantial progress in improving our combat capability.

In the last year we have been able to put major aircraft systems in the hands of our Fleet Marine Forces. From all reports I am receiving, this equipment is working exceedingly well. I would like to illustrate that point by taking three major systems that are in the process of being delivered. I will take them in the order they arrived in our Fleet Marine Force units.

We will start first with the CH-53E Super-Stallion built by Sikorsky. Our first squadron, now in New River, N.C., has a full complement of 15 CH-53E's and will be ready for full operational deployment in June.

Our second squadron, in Tustin, Calif., now has its first two aircraft and we anticipate that we will complete its outfitting by December of this year.

Our CH-53E pilots are telling me that the aircraft performance is an unqualified success. They are lifting routinely 14½-ton practice loads and they have lifted enough 16-ton loads to demonstrate that very heavy lift is well within the capability of this aircraft.

As for the 1983 budget we are considering, the 11 CH-53E's we are requesting will help us to establish our third squadron during fiscal year 1985. The first three squadrons will take care of the Marine Corps' heavy lift requirements for the M-198 howitzer, which weighs 8 tons, and its prime mover which weighs 12½ tons.

With the planned introduction of the LAV, light armored vehicle, in large numbers in the Marine Corps' inventory, our requirement for CH-53E's will increase proportionately.

The next aircraft, in order of its arrival in the Fleet Marine Force, is the F/A-18 Hornet built by McDonnell Douglas. Thanks to substantial progress in this program, the modernization of our VMFA fighter squadrons is going to take place next month when the first squadron turns in its old Phantoms and on the first of July moves to Naval Air Station Lemoore to start transitional training the F/A-18. They will be back at El Toro by around Christmas with a full complement of 12 F/A-18's, thus being the first operational squadron to see service with that remarkable new aircraft.

Incidentally, we will have two squadrons following that first one. So we are going in the next 6 months; that is, the period June through January, to have three squadrons in training on the F/A-18.

The reports I am getting from both Marine and Navy pilots undescore the claim that the F/A-18 will set the standard of excellence for fighter/attack aircraft for many years to come. This is not just the pilots who are singing the praises of the F/A-18. It is also the maintenance NCO's and petty officers, the men who have to turn the wrenches, who are delighted to find they have an aircraft that requires one-half the maintenance effort over the old F-4

Phantom. This is welcome news indeed for both the Navy and the Marine Corps.

I would like to give the committee an update on where we are with the AV-8B program which is the centerpiece of the Marine Corps modernization of its V/STOL light attack force.

You will be pleased to hear that the Harrier program is basically on cost and on schedule. Since the last hearing, McDonnell Douglas has built, from the keel up, four full-scale development aircraft. These are the first FSD AV-8B aircraft. The first of these new aircraft flew on November 5 on schedule. We have had 10 flights since and test pilots have gone out of their way to praise the aircraft's superb handling characteristics.

These first FSD aircraft will move to Patuxent River next month to begin their initial tests. Formal operational evaluation is scheduled to begin next August. The precise manner in which we are making these milestones with this program gives us confidence that we will make our September 1985 IOC on time.

The only remaining area of major concern for us regarding the AV-8B program, is development of a two-seat trainer Harrier. We foresee the need for a two-seat Harrier in the fiscal year 1986 timeframe to adequately handle the heavy pilot training load as we transition pilots from our conventional attack squadrons to our V/STOL light attack squadrons. This requirement is under study by both the CNO staff and the Commandant's staff and will be part of our 1984 budget formulation.

I think it is important for me to add that the Marine Corps has, in the AV-8B program, through the use of its first generation AV-8A, refined to near perfection the V/STOL light attack concept. In short, we have written the book on V/STOL operations in this country. Equipping our light attack force of eight squadrons with a new, second generation AV-8B will bring to fruition these operational concepts with both operational safety and combat capability second to none.

Before I leave the AV-8B, I would be remiss if I did not express once again my appreciation for the splendid support we have received from the Congress on this unique Marine Corps program.

So far I have only talked about ongoing, mature, established programs. Now I would like to outline a very important helicopter modernization effort which is just now getting into the formative stage.

For several years, the Marine Corps has been seeking a suitable replacement for our aging fleets of CH-46 and CH-53A and D helicopters. A replacement has become critical because, first of all, we have right now an inventory shortfall which limits our ability to take care of our amphibious lift requirements.

Each year normal attrition takes its toll. There aircraft, because of their age, are experiencing an increasing cost of ownership. In other words, they are getting expensive and difficult to maintain. Finally, in our opinion, they lack the survivability and performance characteristics needed on a modern battlefield.

For these reasons, the Commandant has made this timely replacement effort his No. 1 priority for Marine aviation.

The Marine Corps is pursuing two approaches to this problem, one long term and the other short term. In the long-term approach,

we are actively participating in establishing with the Navy, Air Force, and Army, a joint service program designed to produce an advanced vertical lift helicopter, now designated the JVX, with an IOC in the early 1990's. We believe a derivative or variation of this aircraft has the clear potential of fulfilling our medium transport lift requirements.

In the short-term approach, we are planning to procure an off-the-shelf helicopter as soon as possible to cover our inventory shortfalls until this new program, the JVX, becomes a reality.

Now I would like to continue my remarks and conclude them by attempting to tie together the various modernization programs I have been talking about and relate them to the modernization of our Marine Reserve aviation components.

Adding each one of these new aircraft to our regular establishment gives us the opportunity to upgrade our Reserve squadrons with more modern and more combat-capable aircraft. For example, the introduction of the F/A-18 into the activity structure will enable us to free up sizable numbers of the latest model of the F-4 and let them migrate into our Reserve fighter squadrons. In return, the AV-8B will provide the same benefit by releasing the A-4M, which is still a combat-capable attack aircraft, and thus enable us to provide them to our Reserve attack squadrons.

Thus our modernization program, although designed primarily for the regular establishment, pays a double dividend by taking care of the Reserves as well.

Mr. Chairman, that concludes my remarks. I will be happy to answer any questions you may have.

WRITTEN STATEMENT OF LT. GEN. WILLIAM J. WHITE

Mr. Chairman, Distinguished Members of the Committee: It is a privilege to once again address the committee on the state of Marine Aviation. During the past year, we have made significant progress toward increasing our combat capabilities and I thank the committee for the strong support which has made this possible. I am pleased to report that we are beginning to place new weapons systems in the hands of our Marines in the field and, by all indications, these systems are working well. At this time, I would like to discuss several aviation programs of particular importance to the Marine Corps.

Marine Aviation's number one modernization program today is a replacement for our aging medicum helicopter force of CH-46 and CH-53A/D aircraft. These helicopters suffer from several problems which make planning for their timely replacement a critical necessity. First, we have an inventory shortage which limits our ability to meet our current medium lift requirements. Second, these helicopters, due to their age, have an ever increasing cost of ownership. Third, these airframes lack the survivability and maintainability of current generation aircraft. Finally, the heavier future lift requirements of the Marine Amphibious Force require a more capable assault transport aircraft. For these reasons, solutions to our assault vertical lift dilemma must be undertaken without further delay. The Marine Corps is pursuing this solution by two approaches. First, we are participating in the establishment of a joint service program designed to produce an advanced vertical lift aircraft, designated JVX, by the early 1990s. A variation of this aircraft has the potential of becoming the Marine Corps' medium assault transport. Second, we are planning procurement of off-the-shelf helicopters as a means of providing a suitable interim remedy to our medium lift shortfall until a replacement advanced vertical lift aircraft becomes a reality. Funding requested in fiscal year 1983 will enable us to proceed with both approaches to our medium assault lift solution.

As in past years, the AV-8B Harrier program continues to be the key element in the Marine Corps' modernization of its light attack force. The Committee will be pleased to hear that the Harrier program is proceeding on schedule. Since last year's hearing, four Full Scale Development (FSD) aircraft have been built. The first AV-8B FSD model flew on November 5, 1981. That flight and 10 subsequent flights

have all been highly successful. FSD aircraft will proceed to Naval Air Test Center (NATC), Patuxent River, Maryland, in April to begin initial testing with operational evaluation (OPEVAL) schedule for August 1983. The planned Initial Operational Capability (IOC) of 1985 is on schedule. Our only area of concern is the resolution of training requirements which will be generated by the AV-8B's replacement of the A-4M. This problem is currently under study. With the procurement of 18 AV-8Bs requested in fiscal year 1983, we will take another positive step toward our goal of an all V/STOL light attack force.

Thanks to substantial progress in the F/A-18 Hornet program modernization of our Marine fighter-attack (VMFA) force will actually begin in July when VMFA-314 proceeds to NAS Lemoore California six months of F/A-18 transition training with VFA125, our joint Navy-Marine F/A-18 training squadron. VMFA-314 will return to MCAS El Toro, California, in January 1983, where it will receive its full complement of 12 F/A-18s. The squadron will be joined by two other squadrons, VMFA-323 standing up in October 1982 and VMFA-531 in January 1983. This will enable the Marine Corps to field the first three operational F/A-18 squadrons by the end of fiscal year 1983. The Navy and Marine Corps have agreed to develop a capability to deploy two Marine Corps F/A-18 squadrons by January, 1984, should the need arise. This capability will be attained just 12 months after the first operational F/A-18 squadron has completed initial training, and we believe it to be a major logistic as well as operational milestone.

The F/A-18 will clearly provide Marine Aviation with significantly enhanced combat superiority, both as a fighter and attack aircraft, over the F-4 that it replaces. The reports from VFA-125 pilots and maintenance personnel not only herald the F/A-18 as a first rate fighting machine but also indicate that the aircraft is equaling or exceeding all reliability and maintainability specifications. This is welcome news indeed to the Marine Corps and all of Naval Aviation.

In spite of all the good news about the F/A-18, we do have one area of concern: RDT&E funding. In fiscal year 1982, we note a $35M shortfall which will cause significant delays and reductions in the air to ground attack capability test program at Patuxent River. In the long term, the testing will be completed, and the Hornet will achieve its full potential as an attack aircraft. In the short term, however, delays in fiscal year 1982 testing will result in aircraft being delivered to Marine squadrons in 1983 with less than desired capability.

Another new aircraft which is proving its worth every day in the Fleet Marine Force is the CH-53E Super Stallion. Our first CH-53E squadron, HMH-464 is now operating from MCAS(H) New river, North Carolina, with its full complement of 15 aircraft. Our second 53E squadron was activated in December 1981 at MCAS(H) Tustin, California, and received its first aircraft in February 1982. By all accounts, the CH-53E is a bonafide operational success. Reports from HMH-464 pilots indicate that the performance of the CH-53E is exceeding our original expectations. Since receiving its first aircraft in June 1981, the squadron has routinely lifted 14.5 ton practice loads and supported our ground Marine units at Camp Lejeune, North Carolina, in a variety of operations.

Additionally, the squadron will be participating in operational tests of several Light Armored Vehicle (LAV) candidates this spring at the Marine Corps Air Ground Combat Center at 29 Palms, California. The 11 CH-53Es requested in fiscal year 1983 will be used in outfitting our third CH-53E squadron which we plan to establish in fiscal year 1985. These first three squadrons will minimally meet our current heavy lift requirements for the ship to shore movement of the M-198 Howitzer (8 tons) and its prime mover (12.5 tons). With the introduction of the LAV (14.5 tons) into the Fleet Marine Force, total heavy lift requirements for the ship to shore and subsequent operations ashore missions will more than double the number of CH-53E squadrons required to meet the demand.

Another important helicopter program addressed in the fiscal year 1983 budget is the AH-1T Cobra. There is 17.2 million dollars in long lead procurement funds requested for what is essentially an off-the-shelf purchase of 22 AH-1Ts in fiscal year 1984. These attack helicopters plus an additional 22 planned for procurement in fiscal year 1985, are needed to rectify a severe attack helicopter deficiency in both our active and reserve Marine aircraft wings. The AH-1Ts being procured will be capable of firing the Sidewinder missile as well as anti-tank weapons which will give them a new air to air capability as well as a much enchanced anti-tank capability. Both of these added capabilities are clearly needed to counter the serious threat posed by the Soviet Hind-D helicopter and armored columns.

Because of the magnitude of the Soviet tank threat, Marine Aviation has focused its attention on Precision Guided Missiles (PGM) which can successfully engage enemy armor at standoff distances. We believe the Hellfire and Laser Maverick are

two such PGMs which can take on the threat and beat it without unacceptable aircraft attrition.

Hellfire is being procured for eventual use by our attack helicopter force. The great tactical advantage of the Army developed Hellfire missile over the TOW is in the survivability it offers the attacking aircraft. Our pilots will be able to fire the laser guided Hellfire at a tank which is laser designated by the ground commander and then break away before entering the tank's anti-aircraft killing zone. With the TOW, the aircrew must remain practically stationary while guiding the missile to the tank thus setting up an aircraft—tank version of a "High Noon" shootout with the battle being decided by whoever is quicker on the draw. Our AH-1/Hellfire IOC of fiscal year 1986 will provide the ground commander with much needed additional tank killing punch.

On the fixed wing side of Marine Aviation, Laser Maverick promises to offer the same type of aircraft survivability to our AV-8B, F/A-18 and A-4M aircraft that the Hellfire will provide to the attack helicopters. It also offers tremendous target lethality with its unique 300 pound warhead, the largest on any U.S. anti-tank PGM. Even a near miss from this weapon will be able to pulverize the most heavily armored Soviet tank and other hard surface targets. By providing the fixed wing community with an anti-tank weapon which the ground commander can control by laser designation, Laser Maverick furnishes additional safety for friendly forces which is so crucial in the type of close air support which Marine air provides for Marines on the ground. With operational testing commencing in March 1982, Laser Maverick's planned IOC of fiscal eyar 1985 looks solidly achieveable.

Another area of Marine Aviation in which we are improving our capabilities is ground air defense and air control. The constant expansion of Soviet attact capabilities illustrated by weapons systems like the HIND-D and MIG-27 demands improved air defense protection for our front line Marines as well as vital rear area installations. These requirements are being addressed as quickly and as economically as possible through the acquisition of IHAWK TRIAD equipment, Stinger missiles, TAOC-85 Air Control Center and the AN/TPS-59 Surveillance Radar.

We are expanding our surface to air missile capabilities by adding a third firing section to each of our IHAWK batteries in fiscal year 1983. This will increase each battery's simultaneous engagement capability from 2 to 3 targets which is another way of saying that we will make it more difficult for the enemy to saturate our air defenses. We will add an additional TRIAD (three firing sections) battery to each of our light anti-aircraft missile (LAAM) battalions in fiscal year 1984. In addition to this IHAWK TRIAD equipment enhancement, we are acquiring increased numbers of IHAWK missiles to improve the sustainability of our LAAM battalions. The HAWK Missile System will be with us well into the 1990's, thus, we believe that these IHAWK initiatives represent prudent, economical improvements.

Moreover, in fiscal year 1982, we are increasing our Forward Area Air Defense (FAAD) platoons from one to four platoons per aircraft wing. In fiscal year 1984, we will complete the expansion by adding a fifth platoon to each wing. These platoons will be receiving the Stinger missile, a more effective replacement for their current Redeye missile. As a matter of fact, our Third Marine Aircraft Wing at MCAS El Toro, California, has just recently completed outfitting one of their FAAD platoons with the Stinger missile. This first fully operational Stinger unit has been assigned to the 7th Marine Amphibious Brigade, a part of the Marine Corps' commitment to the RDJTF.

Our current air control equipment will be approaching the end of its serviceable life in 1985. To replace this equipment with state of the art technology, the Marine Corps is continuing to pursue a tactical air operations control system called TAOC-85. The modular design of the system will greatly increase its mobility and reduce strategic air/sea lift requirements. Operational evaluation of TAOC-85 will commence in early 1983 and an IOC of late 1985 is planned.

To match the air control capabilities of TAOC-85, we are procuring the AN/TPS-59 Radar to provide a long range, three dimensional air defense surveillance radar. Because of its superior ECM capabilities, improved reliability and maintainability and overall unexcelled performance, the TPS-59 is recognized as the world's finest air defense radar. The 10 radar sets requested in fiscal year 1983 will initially be used with our present air control units and then ultimately with TAOC-85 when that system is fielded.

In addressing the preceding weapons systems, I have forecast substantial modernization for our active structure, however, I should emphasize that this modernization also provides an important opportunity for us to upgrade the Marine Corps' reserve aircraft wing. For example, the introduction of new AH-1Ts into the active structure will free sizeable numbers of AH-1J helicopters to migrate into the Re-

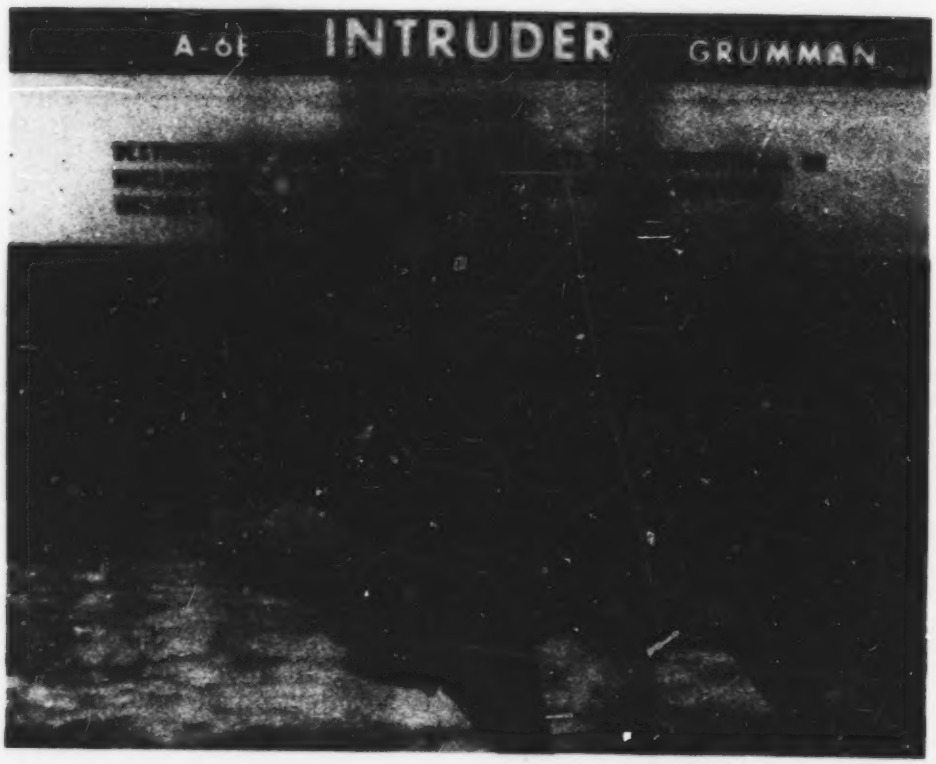
serve component. The AV-8B will provide the same benefit by releasing A-4Ms equipped with the Angle Rate Bombing System (ARBS) and laser Maverick to the Reserves. The transition to the F/A-18 will have the same effect on the Reserve fighter squadrons. Thus, as we improve the capabilities of our Active Marine aircraft wings, we improve our Reserves as well and the dividends we receive are doubled.

This concludes my formal remarks. At this time, I am ready to answer any questions you may wish to ask.

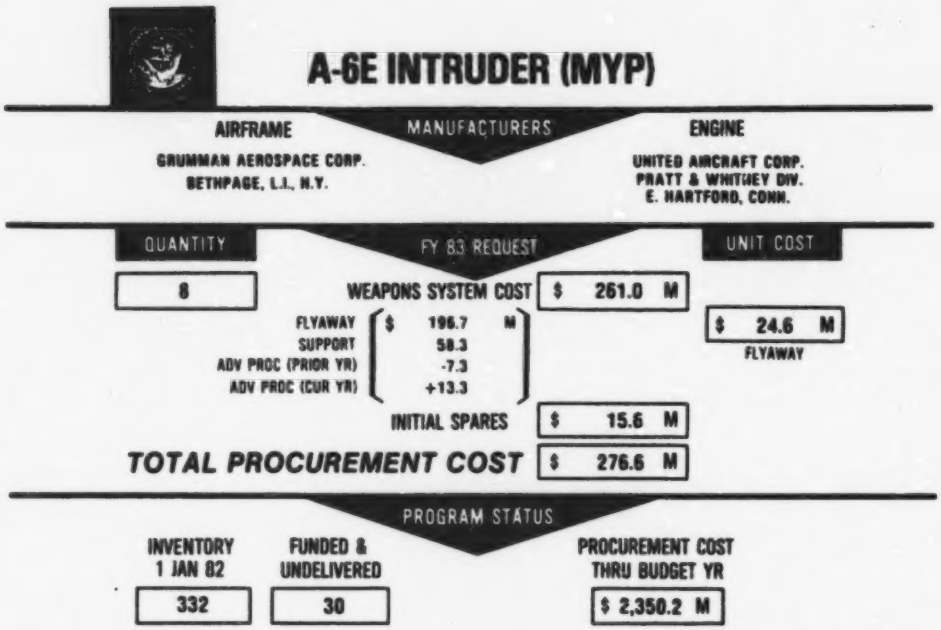
Mr. STRATTON. Thank you, General.

I think, Admiral McDonald, it might be useful, you have expressed your requirement in general terms, if we could go down line by line and take each one of these so that we have a chance to discuss its merits and failures, if any.

Admiral MCDONALD. Thank you, sir.



The first aircraft I would like to discuss today, sir, is the A-6E Intruder. As you are aware, the A-6 is our all-weather medium attack aircraft used in both Navy and Marine Corps squadrons. It gives us the capability to work not only under all weather conditions, but at night while carrying significant loads of weapons. It really is our big Sunday punch aboard carriers.



The fiscal year 1983 request includes eight aircraft for a total procurement cost of $276.6 million. This amount includes $15.6 million for initial spares and $13.3 million as an advance for multiyear procurement for eight aircraft in fiscal year 1984. The flyawav unit cost on this aircraft is $24.6 million.

Mr. STRATTON. It was my understanding that you have reduced the buy on these from 12 to 8?

Admiral MCDONALD. Yes, sir; that is correct. There were 12 in 1982. The request is for eight in 1983, Mr. Chairman.

Mr. STRATTON. Does this indicate any intention to phase out the A-6?

Admiral MCDONALD. No, sir; on the contrary, we perceive continuing to buy A-6E's through the 5-year defense plan and I would perceive that we might even continue procurement beyond that period of time. However, the eight is a reflection of total overall affordability of trying to fit our needs more responsively on a priority basis.

Obviously, we had to look carefully at where we would take those cuts. The A-6E, as you are aware, is assigned to our squadrons today at a level of 10 aircraft per squadron, which is not the number we started with. We had initially planned to have 12, but due to decreased buys before I got into the job and since I have been there, we have been able to maintain only 10 per squadron and predict being able to do so only until the early 1990's with the buy that is in the budget right now.

Mr. STRATTON. It is the basic fighter intercept for aircraft?

Admiral MCDONALD. No, sir; it is the medium attack aircraft. It is our bomber that carries significant amounts of bombs. It has performed extremely well in Vietnam in all kinds of weather and under all kinds of conditions.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. We have a surplus of A-6E's, don't we?

Admiral MCDONALD. Yes; if you look at the program today, you will see we have a surplus of about 20 aircraft. That will gradually fall off to something less than that in the 5 years we are talking to.

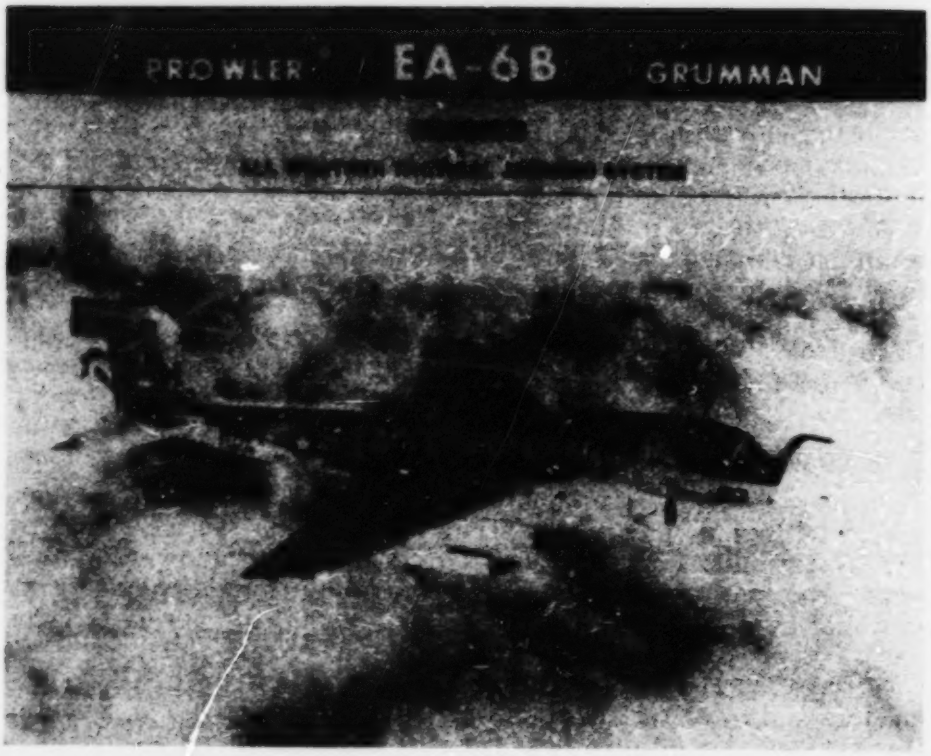
You must remember that in 1987, though, we hope to stand up the 14th carrier air wing which will absorb much of that, even if we continue to buy at the rate we are buying right now. So that surplus is transient, occurring in a very short period of time. We really need to continue to buy the aircraft even with the very small surplus.

Mrs. HOLT. Would it be effective if we bought the F-14 and the EA-6B instead of buying the A-6?

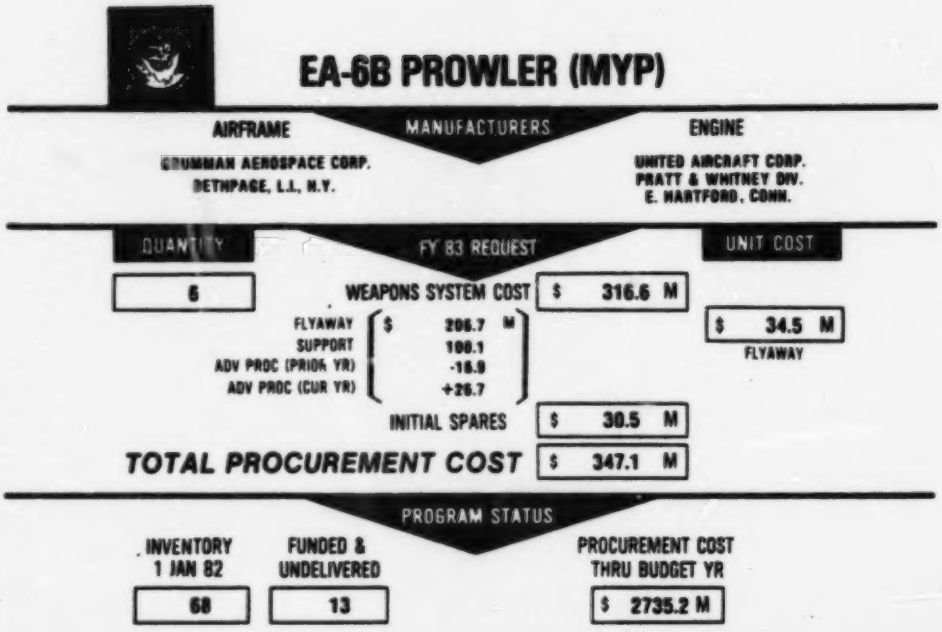
Admiral MCDONALD. There are hard requirements for the F-14 and hard requirements for the EA-6B. To move those moneys from the A-6 into either the EA-6B, or the F-14, or maybe to both would cause us to stop production on the A-6. We could probably survive with that for a short period of time, but we are going to have to start that line up again by 1987 or some time in that time-frame. And you are still going to have to buy those airplanes that we would be buying in place of the A-6 during the period of time that we stopped it.

We have found in examining the P-3 line that to stop a production line and to restart it sometimes is very expensive. So, I would offer that we don't think it is a cost-effective manner of trying to distribute the money for a very short period of time.

Mr. STRATTON. Any other questions on the A-6?



Admiral McDONALD. The next aircraft is the EA–6B, sir, out of the same family of aircraft. It looks almost as unesthetic as the A–6E. It is our electronic countermeasures aircraft. It carries no bombs, does not shoot anybody down, but jams them with frequency jammers. It neutralizes enemy radar controls and other types of information that he gathers electronically from us. It is an absolutely essential airplane in the battlefield areas that we are seeing today and will see tomorrow.



The fiscal year 1983 request includes six aircraft for a total procurement cost of $347.1 million. This amount includes $30.5 million for initial spares and $26.7 million for advanced multiyear procurement for six aircraft in fiscal year 1984. The flyaway unit cost on this airplane is $34.5 million.

Mrs. HOLT. Mr. Chairman.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Why has this cost gone up so on this airplane? If you look at it compared to 2 years ago, there has been a tremendous cost increase. Isn't this one of the programs that the Secretary cited as an example of cost savings because of multiyear procurement?

Admiral MCDONALD. Primarily, Mrs. Holt, we have taken another step function with the airplane. We have evolved that airplane into really three sets of improvements that have taken place. We are now moving into what we call the ICAP-II model, improved capabilities model for the airplane.

A significant amount of money in that cost is to accommodate that modification of the airplane. Other cost increases are escalation, as we see in all of our programs, some ECM equipments, some radio equipments, some mission planning equipment.

Mrs. HOLT. Could we have all that for the record? Could you break it out?

Admiral MCDONALD. I will be happy to provide it for the record because it gets fairly complicated to try to describe it orally.

Mrs. HOLT. Thank you.

[The following information was received for the record:]

EA-6B

The increase in the fiscal year 1982 EA-6B production program over the fiscal year 1981 level is attributable to the following:

Flyaway cost increased by $30.8 million, or 19 percent. $12.6 million was due to escalation. $18.2 million was due to configuration changes including ICAP II, ASN-123, ASN-130, AYK-14 and increased cost of aircraft engines.

Support increased by $13.6 million from $43.7 million to $57.3 million, or 31 percent.

Escalation caused a $3.5 million increase.

PGSE, PUBS and trainers increased by $10.1 million to accommodate requirements for ICAP II trainer ($5.0 million), avionics PGSE ($4.0 million) and PUBS ($1.1 million).

The increase of 24 percent in the fiscal year 1983 EA-6B production program over the fiscal year 1982 level is attributable to the following:

Flyaway cost increased by $18.9 million, or 10 percent. $13.8 million was due to escalation. $5.1 million was due to configuration changes, including ICAP II, ASN-123, ASN-130, ALR-67 and ARC-182.

Support increased by $42.8 million from $57.3 million to $100.1 million, or 74 percent.

Escalation caused a $6.8 million increase.

PGSE and PUBS increased by $36.0 million to accommodate requirements for ICAP II ($15.5 million), Mission Planner ($6.8 million), Common ECM ($2.5 million), CV outfitting ($5.9 million), ILS ($1.2 million), VAQ 139 ($3.9 million) and other ($.2 million).

Advance Procurement increased by $8.1 million to fund Economic Order Quantity requirements associated with Multiyear Procurement. This will result in savings in future year procurements but requires upfront funding to achieve these savings.

Mr. STRATTON. Go ahead.

Mr. BADHAM. Mr. Chairman.

Mr. STRATTON. Mr. Badham.

Mr. BADHAM. Admiral, are the EA-6B and the A-6 built on the same line?

Admiral MCDONALD. Not built on the same line, but built by the same contractor, Mr. Badham, Grumman. They are not that similar. The EA-6B and the A-6 look kind of alike and there is a degree of commonality in the airplanes.

Mr. BADHAM. It started out with the same airframe, but that is the way it ended up?

Admiral MCDONALD. Yes, sir, notice the length of the cockpit, the area forward of the wing and the vertical stabilizer are different. The wing itself may be pretty much the same.

Mr. BADHAM. Are we losing a lot of money building six and eight aircraft in a year?

Admiral MCDONALD. It is not the most economical rate to build and buy on, Mr. Badham.

Mr. BADHAM. It is not economical at all really, is it?

Admiral MCDONALD. No, sir.

Mr. BADHAM. Down the line we are really going to need these additional aircraft.

Admiral MCDONALD. We are short right now.

Mr. BADHAM. On the EA-6B that is correct, but on the A-6E we have a surplus?

Admiral MCDONALD. Yes, sir; we need those aircraft that are in the small number that are in surplus to fill in and we need to continue to buy.

Mr. BADHAM. Have you considered putting all-weather capability, a greater capability, in either the F-14 or F/A-18. Would shutting

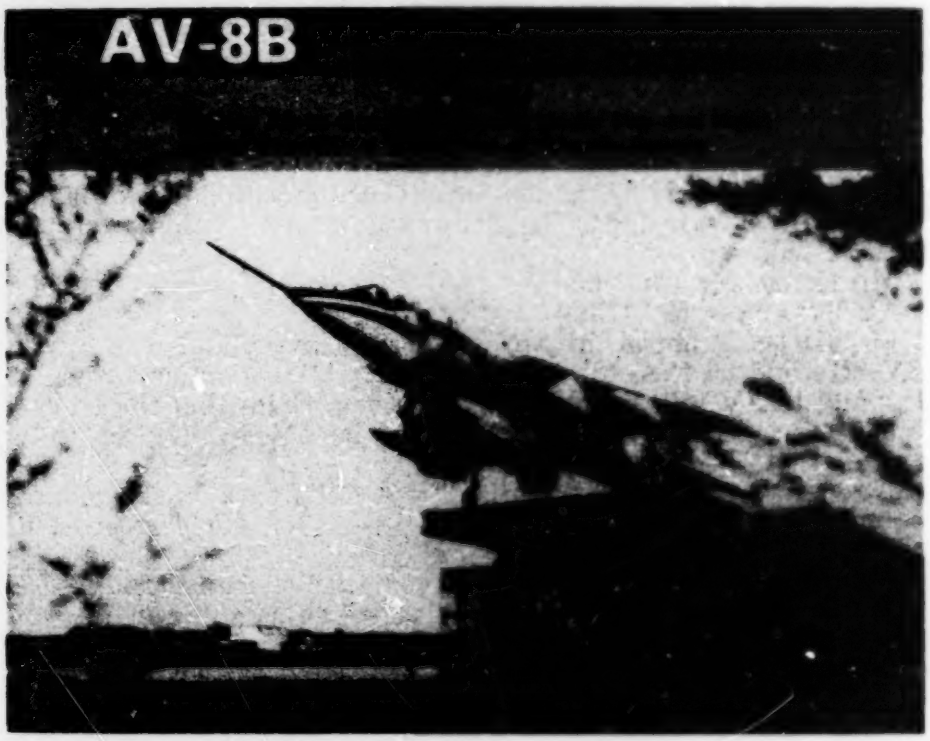
down this line be more efficient, to put those up to efficient production standards?

Admiral McDONALD. We are looking in our long-range planning to do something similar to what you are suggesting. We are going to need replacement aircraft for F-14's and A-6's in the mid-1990's. We are looking right now as to whether you can combine those two aircraft. Whether you can do a derivative of the F/A-18 certainly would be a consideration. That is a problem we are looking at.

Mr. BADHAM. To keep a line open to build eight aircraft is probably like a hand-built automobile when you come down to it.

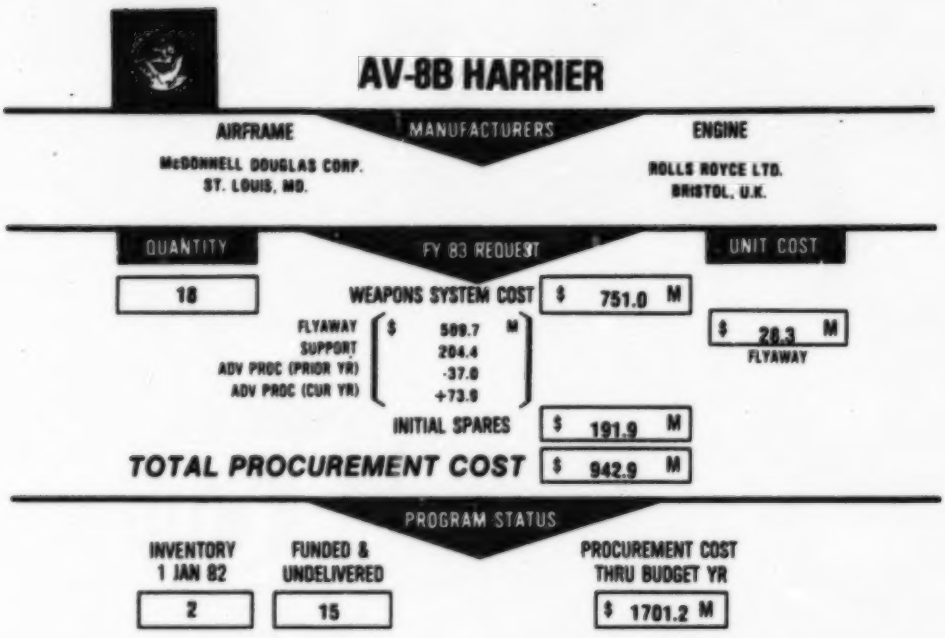
Admiral McDONALD. When I was here 2 years ago, it was down to two. It finally got up to three. We think that we have, and I am not trying to be glib, but I think there is a significant improvement. Six will keep the force level growing gradually and will eventually get us where we want to go. Obviously not at the level we want. I am talking EA-6B's and not the A-6 specifically, sir.

Mr. BADHAM. Thank you.



Admiral McDONALD. The next aircraft I would like to talk about is the AV-8B. After General White's presentation, I really ought to let him describe the airplane for you again, but as you are well aware, this airplane is very unique. It provides the Marine Corps with a capability that is unique to the Marine Corps.

It gives them the close air support in the area of FEBA that no other aircraft can and will provide them with tremendous capability in light attack to carry out their close air-support mission.



The fiscal year 1983 request includes aircraft for a total procurement cost of $942.9 million. This amount includes $191.9 million for initial spares and $73.9 million for advance procurement for 30 aircraft in fiscal year 1984. The flyaway unit cost on this aircraft is $28.3 million.

Mr. HILLIS. Mr. Chairman.

Mr. STRATTON. Mr. Hillis.

Mr. HILLIS. Admiral, in November the Navy planned to buy 24 AV-8B's and 66 F/A-18's. Now the Navy budget reflects 84 F/A-18's and 18 AV-8B's which would suggest perhaps that the Navy is going to sacrifice economies of scale in the AV-8B program to try to achieve an F/A-18 program.

My question to you is: Why has the AV-8 program been reduced in the November draft budget even though the Navy received an increase in budget authority?

Admiral MCDONALD. You have to go back, Mr. Hillis, and look at the total problem we were addressing as we came down into the final months on the 1983 budget. We were faced with an overall affordability issue. We had, as has been noted earlier, reduced F-14's from 30 to 24, A-6's from 12 to 8, maintained a level rate in the EA-6B's and E-2C's. The F/A-18 had been at a reduced rate for the previous 3 years in its procurement beyond what it had been perceived was required. We needed to try at least an attempt to get to an economical buy in a system. The F/A-18 is being used by the Marine Corps in the fighter role as well as by the Navy in the fighter and attack role.

Our conscious decision was to constrain the AV-8B against those kinds of priorities in this particular year.

Mr. HILLIS. Thank you.

Mrs. BYRON. Mr. Chairman.

Mr. STRATTON. Mrs. Byron.

Mrs. BYRON. Let me take that one step farther from Admiral McDonald and ask General White. Could you give me an assessment of what your highest priority aircraft is, F/A-18 or AV-8B?

General WHITE. That is a very difficult question to answer. I will answer it this way. The Marine Corps has a need for both of these aircraft. We have 12 fighter-attack squadrons which require modernization. They are now equipped with various models of the F-4, the N, J, and the S. That fighter force, which is a fighter attack force, needs modernization very badly.

At the same time, and I am sure this committee is aware of the long, drawn out struggle the Marine Corps has had in bringing the AV-8B to fruition, we have a total of eight light attack squadrons, three that are equipped with the AV-8A, which now is almost in the class of being an antiquated aircraft, and five A-4M squadrons representing 1950 technology, which needs modernization.

Therefore, my answer to that question is that the Marine Corps needs modernization in the worst possible way. We have not received a modern fighter for the last 20 years. We are the last service in the United States to receive a new fighter and that is one of the reasons why the CNO, working with the Commandant, gave us the first three F/A-18 squadrons.

So, my answer is that the Marine Corps, to be a combat-capable service on future battlefields, needs in the worst possible way both of these, admittedly, very expensive aircraft.

Mrs. BYRON. I think the Commandant has testified before the full committee, if I am not mistaken, that the AV-8B was the highest priority in his estimation. I could be wrong on that, but I recall his making that statement.

General WHITE. Let me add to that if I may. For this year because the Commandant, in looking over all of his programs, both green and blue dollar programs, has seen the AV-8B finally enter the President's budget and is on the verge of production. I hate to use a crass statement like the fact that we have sold the program. I hope you don't misunderstand that, but the Commandant thinks we have sold, in fact, the AV-8B. Now he is shifting his priority for marine aviation to helicopter replacement and that is our No. 1 priority.

Mrs. BYRON. You are requesting 43 F-18's and only 18 AV-8B's and the AV-8B was the one that was highest on your profile list.

General WHITE. The number of 43 F/A-18's, I could be mistaken in this, I am not so sure I can recall the exact addition of aircraft, but we are looking for the standup of two F/A-18 squadrons. That will require 24 aircraft. But with each one of these allocations of aircraft comes pipeline, training, and attrition aircraft in some percentage.

So, with each buy there is an additional buy to take care of the lifespan of the aircraft for training needs and also pipeline to cover ourselves when we have aircraft in SDLM.

Mrs. BYRON. Don't you need 20 aircraft per squadron?

General WHITE. With the AV-8B that is correct.

Mrs. BYRON. It just seems to me you should have gone for 20, or 22, or 24.

General WHITE. Mrs. Byron, I must tell you, I participate with Admiral McDonald in these deliberations when we attempt to decide how many aircraft we are going to procure. As a sponsor I don't own any money, myself. I am a supplicant to the Navy for blue dollars.

Admiral McDonald and I have worked for almost 3 years in trying to solve these affordability problems. I must say, and for the record, I have never seen anything done fairer. Now this is not to say that I agree with the procurement of 18 aircraft in this year's budget. I would much prefer 24, which makes the AV-8B come in at a much more economical rate.

I also understand the affordability issues that he is facing.

Mrs. BYRON. Thank you.

Mr. MAVROULES. Mr. Chairman.

Mr. STRATTON. Mr. Mavroules.

Mr. MAVROULES. I would like to make an observation. I think we are now beginning to pay for the mistakes of the past when we were as an administration and perhaps as a Congress not funding these programs properly. I can truly understand the questions and where they are coming from because they are all on the button.

What we want to see, at least I speak for myself, I want to see that you are properly funded so that you can be efficient, you can work your programs efficiently, we can guarantee our national security. Actually when you talk about the F/A-18, I believe you are coming in for 84 this year. You should be coming in for 108. You should have been doing that for the last 4 or 5 years. I agree. That is why we are paying for it today and the mistakes of the past are starting to catch up with us.

Let us not go back. What we have to do is fund these programs, fund the AV-8B, and fund the F-18, and fund the programs that are necessary to give you the kind of airplane that you haven't had for 20 years.

This is just an observation on my part. Maybe that is a plus for your side, I don't know.

Mr. STRATTON. General, I think we do have a problem with this aircraft in conjunction with the F/A-18. That was the biggest opposition we got on the floor last year when we brought our bill out. It was this question of trying to distinguish between the F/A-18 for the Marine Corps and the AV-8B.

Did I misunderstand you, Admiral McDonald, when you said that some of the AV-8B's are going to be used by the Navy?

Admiral MCDONALD. Yes, sir; you misunderstood me. We will use the AV-8B's flown by Marine Corps aviators, who are naval aviators, too, as you well know, flying off LHA's, LPH's and contributing to naval forces at sea, but the Navy does not intend at this time to buy the AV-8B or a derivative thereof.

We are looking at that as evolutionary to lead us into some of our V/STOL options, Mr. Chairman. The thing that I did say that may have misled you is that the Marine Corps is using the F/A-18 in the fighter role whereas the Navy uses the F/A-18 in the fighter and attack role.

Mr. STRATTON. I understand that.

General White, you said that it had been a number of years since you had had a modern fighter. Don't you consider the AV-8B a modern fighter?

General WHITE. Mr. Chairman, I think we are getting into definitions now. I have been using the term "light attack" to describe the AV-8B. When I talk about the F/A-18, I say fighter/attack F/A-18. The F/A-18 has the unique ability of being a fighter aircraft in the morning and then, with a simple ordnance change, going out as a close air support or attack aircraft in the afternoon.

With the AV-8B, yes, it does have some close-in ability to defend itself or high-value targets because it is equipped with Sidewinders, but it is a subsonic aircraft. It is not supersonic, it does not have a radar and it could not compete against modern enemy fighters. It is not designed as a fighter and it was never intended to be a fighter whereas the F/A-18 is.

Mr. STRATTON. I think we have to come back to the same question that Mrs. Byron asked you. I have a hunch that your real answer would be the F/A-18 rather than the AV-8B. This is the thing that concerns us as to whether we really want to go this route of procuring these two aircraft in view of the enormous costs involved.

My impression, and I could be entirely wrong, was that the Marine Corps had been without a first-line aircraft, modern aircraft, for some time, and when they offered you the AV-8B that was certainly better than what you had. So you grabbed that, and it also gave us an opportunity to convince the British that we were not unagreeable to the so-called two-way street. But that if it came to push and shove, the F-18 would be more of what the Marine Corps really wanted.

Is that an unfair analysis?

General WHITE. Yes; I would say it is an unfair analysis, Mr. Chairman. I stand on what I said a few moments ago, that the Marine Corps has a definite need, a definite hard requirement for the fighter ability that is represented in the F/A-18. That is a good aircraft.

Mr. STRATTON. What does the AV-8B have that the F/A-18 does not have?

General WHITE. That is the key to the whole situation. We have, in conjunction with the British, developed an aircraft that is expressly designed for close air support. I might say that marine aviation is really bought and paid for by the Congress to support marine ground troops. That is our whole reason for existence. When the ground side of the house changes equipment or tactics we are required to change with them. We are a supporting arm almost in the same vein as artillery. That is a different philosophy than is pursued by the other services. Our role in life is to support marine ground formations, marine battalions, infantry battalions.

Mr. STRATTON. What does the AV-8B have that the F/A-18 does not have?

General WHITE. The AV-8B will be positioned in close proximity to those infantry troops and be immediately responsive to their support. You must keep in mind that the marine ground force is a light equipped organization in comparison to the U.S. Army. We

make up in firepower through our attack aircraft what we lack in artillery and other heavy weapons.

The Marine Corps relies on its aviation more than other services. So, we have designed the AV-8B to put ordnance on target in a very fast and responsive manner, which is not possible with any other type of aircraft, including the F/A-18.

Mr. STRATTON. Then you are going to use the F/A-18 strictly in the fighter role, is that correct?

General WHITE. No; we are not. Our philosophy is that we need as much multimission use out of an aircraft as we possibly can obtain from it. Yes; in the early stages of any engagement, particularly in an amphibious operation, the emphasis will be gaining air superiority and that takes a fighter aircraft. If we run into tasks that require more attack capability, then we intend to use the F/A-18 in an attack role and to reinforce those AV-8B squadrons.

Mr. STRATTON. I am not sure that you have me convinced, but we don't need to spend any more time.

Mrs. BYRON. Let me try to convince you. The role and the mission of the AV-8B in my understanding is to be forward positioned, to be available on a much faster callup basis than the F/A-18 could possibly be in that role. Therefore, the availability and the time factor is of the utmost importance and the V/STOL capability gives it another dimension that the F-18 does not have.

Mr. STRATTON. If getting close to the fighting base is the criterion, then why get an aircraft that you are going to have to locate way back behind the lines? I wasn't aware that the Marine Corps didn't like fast aircraft. I saw them operating in the Philippines and in New Guinea. The fact that an aircraft can fly rapidly I never thought was an objection.

Why do you have to keep the F-18 any farther back than you would keep the AV-8B?

General WHITE. Mr. Stratton, the Marine Corps likes fast airplanes. The faster the better for certain types of aircraft; but in our close air-support aircraft, the ones that carry the weapons up to the front lines and dump them on the enemy, speed is not the greatest essentiality. Maneuverability is, and attack systems are, and the proper weapons are. But we certainly want an aircraft that has the speed of the F/A-18 for air superiority engagements.

I have been handed a note here and I thought I might just mention the basing aspect of the AV-8B. We have in the AV-8B an aircraft that can be based any place. It can be based in a cow pasture, in a parking lot, on a strip of road, on an amphibious ship, on a CV, or on top of the Empire State Building if there is space up there. We can take this aircraft any place, from the standpoint of deployability, so that marine aviation can be there when our troops are engaged. This is very important to us. We are not held to a big 10,000-foot cement runway as the F/A-18 will be.

Mr. STRATTON. That is a very important point. You still don't have any operational AV-8B's, do you?

General WHITE. We do not have any operational AV-8B's, but we do have four full-scale development AV-8B's which are 99 percent what the production aircraft will be like.

Mr. STRATTON. You haven't had a chance to really test them in actual operations?

General WHITE. The 11 flights that we have had cannot be considered tests. They will be in Patuxent River next month and undergoing initial testing and then we will expose them to a very vigorous operational evaluation starting in August 1983 with Navy and Marine Corps pilots.

Mr. MCCURDY. What is the per unit cost difference between the F-18 and the AV-8B? $23.3 million is your flyaway cost on the Harrier. What is it on the F/A-18?

Admiral MCDONALD. $25.1 million on this year's procurement. You are mixing a little bit of apples and oranges with numbers, considering where it is in the development program, to come to that number. Probably the fairer number, which we will provide, is what is the program unit cost over the life of the program for both of those. I will get that for you. It is $30.9 million for the AV-8B and $28.8 million for the F/A-18.

Mr. BADHAM. Program cost?

Admiral MCDONALD. That is total program unit cost. I would like to talk in terms of flyaway unit cost because when you lose one you just lose the airplane, you do not lose all the other things that go with it. What I have given you is the program unit cost, Mr. Badham.

Mr. BADHAM. That is how the B-1 became the $100 million airplane, Now $200 million, they added everything in and some smart guy divided by 244 and got 200. You might as well count it all in.

Admiral MCDONALD. That is 336 AV-8V's as opposed to 1,377 F/A-18's.

Mr. STRATTON. Let us go on to the next aircraft.

Admiral MCDONALD. The next aircraft may bring just as much discussion. I plan to bring up the F-14 as the next airplane for discussion.

Mr. STRATTON. We have a vote. Maybe it would be better if we went over and caught this vote and then come back on the F-14.

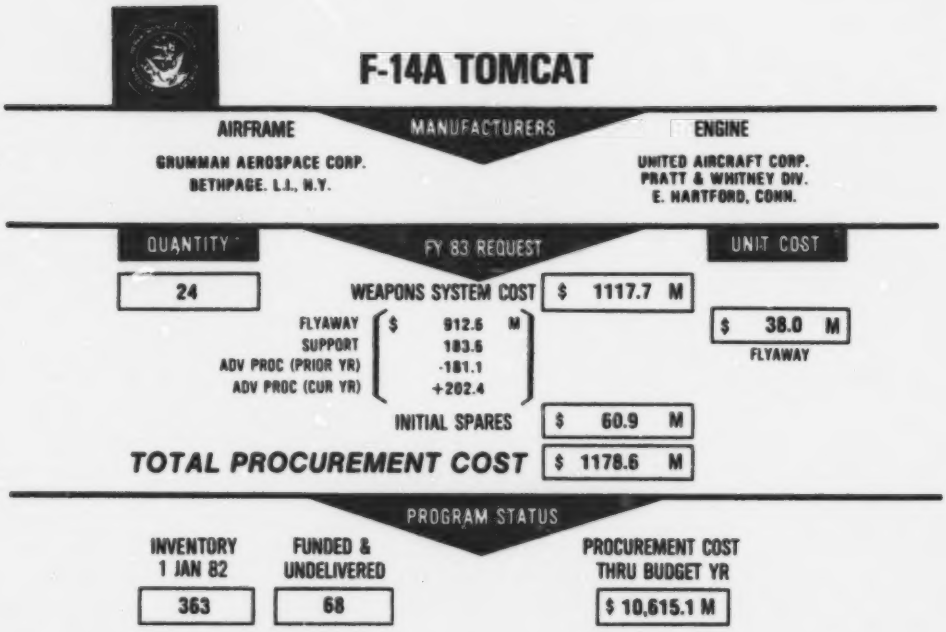
So, we will recess for 10 minutes while we vote.

[Recess.]

Mrs. BYRON. The chairman will be back in a few minutes. He asked if I would reconvene the committee. We left off just beginning with the F-14 programs.

Admiral McDONALD. With your permission we will go ahead and put the F–14 on the screen. The F–14, as I started to explain, is our premiere fleet air defense fighter aircraft. It has been in the inventory since about 1972. It is the only aircraft in the inventory and in the free world that is capable of firing the Phoenix missile and the weapons system consisting of the F–14 and the AWG–9 radar is probably the most potent air-to-air combat device in the world today. We have had significant success rates with the missiles that we have fired.

The F–14 is the difference in the outer air battle in today's world, looking at the Soviet air threat as posed to the battle group and also to the air-to-surface missile threat. The F–14 in the fiscal year 1982 request includes 24 aircraft for a total procurement cost of $1,178.6 million. This amount includes $60.9 million for initial spares and $202.4 million for advance procurement for 30 aircraft in fiscal year 1984. The flyaway unit cost for this aircraft is $38 million.



Mrs. BYRON. We have some questions on the F-14.

Mr. WHITE. A year ago in the Carter budget this line was going to be shut down. The Navy was going to stay with bringing up to 18 squadrons, going to the F-18 squadrons for the others. Now we have a requirement for another 336 aircraft which takes us from about $12 billion total program to about a $35 billion total program.

Fiscal year 1983 is really not affected by that, but what we see is the start of a whole new program which has never been justified to the Congress or explained to us. I wonder if you would take a minute to explain where the new requirement comes from, the line you were going to go shut down a year ago.

Admiral MCDONALD. Yes, sir.

Mr. WHITE. And why the F-18 is not going to do the job that you planned for it to do a year ago.

Admiral MCDONALD. Mr. White , as you correctly stated, last year about this time we were looking at a fighter mix for the 12 carrier air wings that would have reflected 9 air wings with F-14's and 3 air wings with F/A-18's in the fighter role. That would have given us 18 F-14 squadrons and 6 F/A-18 squadrons in the fighter role. When the program was initiated many years ago it was structured on the basis of 24 squadrons and the initial buy I believe was 722 aircraft in the initial program.

For affordability reasons as the program progressed the procurement was reduced to 509 aircraft which reduced the air wings to that which I have just stated. In that period of time the Soviet air fleet with the introduction of the backfire bomber posed considerable threat to the carrier battle forces at sea.

The F-14, as I had indicated in an earlier brief statement on the airplane is the only aircraft with the Phoenix missile and it truth-

fully the only aircraft that has the capability of high assurance of destruction of enemy platforms in the outer air battle as far as the carrier battle group is concerned.

The threat had increased as we perceived it. We then started articulating just about this time last year our desire and our plan to go to an all big deck F-14 force. Today the Navy has 11 big deck carriers, 2 medium deck carriers, the *Coral Sea* and *Midway*, which are not capable of operating F-14's from and the U.S.S. *Lexington*, our training carrier.

Our plan now is to build up to put F-14's on all the big decks to insure a greater capability offensively and defensively in the outer air battle against the air threat as we see it and against the missile threat posed against the battle groups at sea.

Mr. WHITE. What is the magnitude of that decision in terms of total cost increase of that kind of decision?

Admiral MCDONALD. The figures are accurate as far as we can program right now. We are estimating the F-14 total program cost will be $35.46 billion.

Mr. WHITE. Did I understand you to say that an F/A-18 working in tandem with the E-2C Hawkeye as a Sparrow platform or AMRAAM platform when that comes on is not adequate for the interception of the Backfire?

Admiral MCDONALD. No, sir, not totally inadequate, constrained as to the window that the attack criteria can be fulfilled because of constraints on the missile and on the airplane. The F/A-18 was not built to replace the F-14. As you recall, the justification for the F/A-18 was to replace the F-4 Phantoms and A-7E Corsairs. The airplane that we are seeing has tremendous capability and with the Sparrow will form a very potent complement to the F-14 force, with its four or six Phoenix missiles on it.

Mr. WHITE. I am interested in your response because I think the committee will want to look at this when the Air Force is in talking about buying F-15's for North American air defense operating in terms of AWACS with the Sparrow missile platform to counter Backfire bombers.

Admiral MCDONALD. May I respond to that also with the fact that several things enhance that type of employment of the F-15 with the Sparrow opposed to the Backfire with the North American Air Defense and the AWACS. I think we may be getting fairly close to classified material, so I will be careful.

The opportunity to receive advanced early warning in North American Air Defense is a lot more prevalent than that which you receive for a carrier battle group, relying almost totally on the E-2C to trigger the intercept capabilities of either the F/A-18 or the F-14. Realize that the F-14 has air-to-air intercept capabilities on its own. So, I think from that standpoint, Mr. White, that aspect has to be carefully evaluated in trying to equate the effectiveness of the AWACS and the F-15 as opposed to the E-2 and the F/A-18.

I would like to close by saying we see F/A-18 as a very definite complement to the F-14 in the outer air battle.

Mrs. BYRON. Let me ask you one question.

Last year you had long lead funds for 27 F-14's in your procurement profile. This year we have dipped down to 24 aircraft and in 1982 you are talking about a rate of 30 a year. If the F-14 is as

important as the Navy says it is why are you reducing procurement this year with a 20-percent real growth on the account? Is that basically dollars and cents?

Admiral McDONALD. Yes, it is basically the same thing. When we reduced the A-6 from 12 to 8 and the AV-8B from 24 to 18 and other aircraft in procurement rates, again it was a matter of affordability. The number of aircraft that we can put on in the decks we have available does not drive the F-14 into the criticality of having a shortage of the airplanes at this time.

Mrs. BYRON. What was the long lead funding on the other two aircraft? Do you recall how many we had long lead?

Admiral McDONALD. No, I do not. I think the AV-8B was 24. I am not positive. I will check. We will provide that for the record, Mrs. Byron. I don't have it with me.

[The following information was received for the record:]

LONG LEAD FISCAL YEAR 1982

The long lead funding requested for the A-6E and AV-8B in the fiscal year 1982 budget request was $7.3 million for 12 aircraft and $49.0 million for 24 aircraft respectively.

Mr. WHITE. Does it make sense to operate three inefficient lines instead of two efficient lines? EA-6B and F-14 lines are all in the same company. At least two of those aircraft are in an inventory surplus position right now.

Admiral McDONALD. I think the total picture, Mr. White, is in total capabilities. You can save money maybe, but you are going to give away certain capabilities we feel in our honest and professional judgment are very difficult to do and maintain the war-fighting capability we are tasked to perform in the future.

Mr. WHITE. You have the capability to restart the line?

Admiral McDONALD. That is true. You have to look very carefully at that as to the savings you get during the period of time you have stopped, what your startup costs are and what you have lost in that period of time.

I go back to the P-3 experience that we agonizingly went through this year to see what the advantages were in stopping that line. There was a proposal to stop the P-3 line for 5 years—then restart it.

Mr. MAVROULES. I have one question.

You have the flyaway cost of $38 million. I think you tried to articulate your position to Mr. White here. I think the figure we had last year for a flyaway unit cost was roughly about $30 million. Am I correct on that.

Admiral McDONALD. Yes, sir, you are corrcect.

Mr. MAVROULES. Now you have gone from 30 to 24. Is that the sole reason for this kind of increase in the flyaway cost? What are the reasons if you have others that you can offer?

Admiral McDONALD. Yes, sir, we do have other reasons. I will let Admiral Seymour talk to that. He has the figures.

Mr. MAVROULES. The reason I ask is that these questions will be asked and you can appreciate that.

Admiral SEYMOUR. Of the $8 million increase in flyaway cost $2.8 million is due to change in escalation, $2.1 million is due to the quantity reduction. In addition to the quantity reduction of six

causing an increase of the $2.1 million we have configuration changes of about $1.5 million, mostly the change to the ARC-182 radio and a seeker head position for the Sidewinder missile.

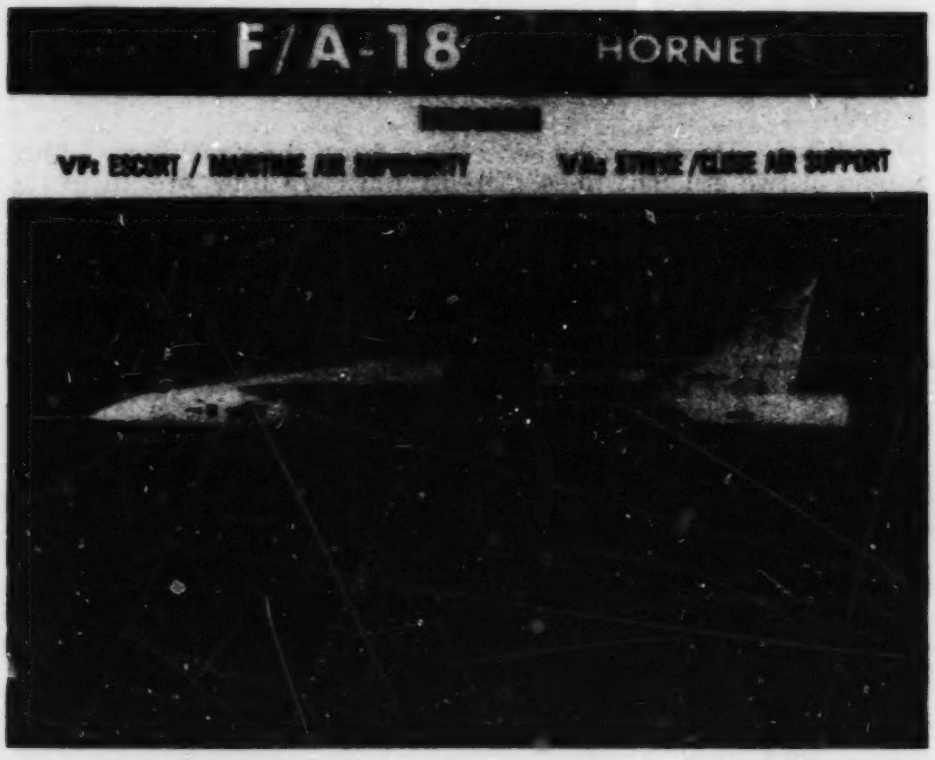
Mr. MAVROULES. That is the change you recommended.

Admiral SEYMOUR. Yes, sir. Formally approved change.

Then in 1983 there is $1.6 million per unit cost that is nonrecurring for a change that is coming in the future; the programable signal processor for the AWG-9 radar which is currently in research and development.

This year we have to put in the nonrecurring effort to make that change in the airplane. Quantity reduction-wise, the total would be $2.1 million.

Mrs. BYRON. Do you want to proceed with the next program if there are no further questions.

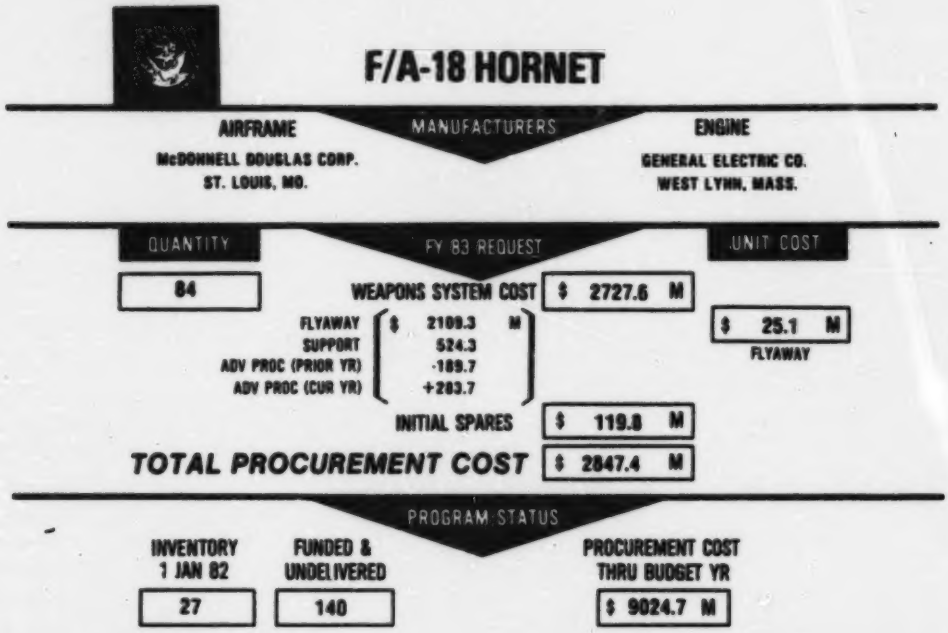


Admiral MCDONALD. The next program is F/A-18, Mrs. Byron. It is the Navy's multipurpose aircraft which will perform for us in a fighter role on our smaller deck carriers. The *Coral Sea* and *Midway*, and as a light attack aircraft replacing all A-7E's.

The airplane has been in the test program. We have over 6,000 hours flying time on them, both in test and in the first transition squadron—VFA-125—at the Naval Air Station Lemoore. This squadron has 10 aircraft on board. They have a full complement of instructors onboard. These instructors reflect the true mix that this airplane represents to the Department of the Navy. It is half

Marine Corps instructors, half U.S. Navy flyers. It is half fighter pilots and half attack pilots. You couldn't get a better mix than that in trying to bring a program together.

The airplane has to be a super airplane to overcome that kind of start. It has been doing just that. We have seen tremendous performance in the airplane in the operational side and are very enthusiastic about the money that has been spent on that airplane to insure reliability and maintainability, which we had not addressed in other aircraft programs prior to this one.



The fiscal year 1983 request includes 84 aircraft for a total procurement cost of $2,847.4 million. This amount includes $119.8 million for initial spares and $283.7 million in advance procurement for 96 aircraft in fiscal year 1984.

The flyaway unit cost is $25.1 million.

Mrs. BYRON. Any questions?

Mr. MAVROULES. I have just one question, Mrs. Byron. I appreciate this opportunity.

Last year you will probably recall there was tremendus support on the part of the Congress for an amendment offered on the floor to eliminate all funding in all phases of development of the F/A-18. I think the side for the F/A-18 prevailed by a margin of three to one. Now, some hot questions were posed on the floor of the House which I am sure you are aware of.

Do you have control at this point with any degree of confidence of overruns relative to this airplane? That is a question for you, Admiral.

Then, General, I would like to ask you a question. You referred to it as an extraordinary plane. Maybe you can articulate it a little bit more if it is in the nonclassified category.

Admiral McDONALD. In the overruns, Mr. Mavroules, we see the F/A-18 program this year with an increase in the program of $4.4 billion. You are going to say that is a significant cost increase and we would agree.

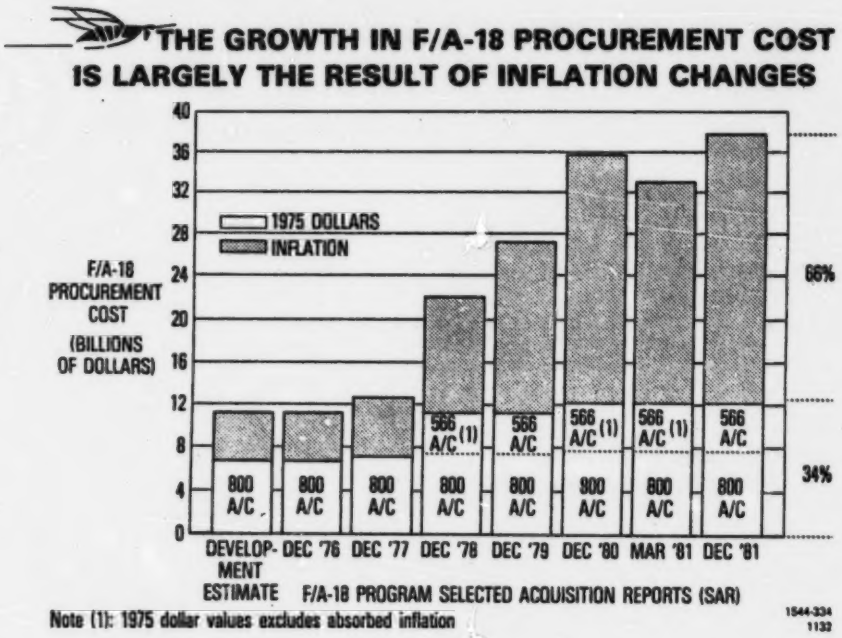
Of that, though, $2.9 billion right off the top is in escalation. Additionally $1.2 billion is due to program stretchout. That is because, as you had indicated earlier, when you don't buy on schedule as you had intended to, you have to buy those airplanes in the outyears and that costs you a lots more money.

I am up to $4.1 billion or $4.1 billion plus in the moneys that reflect that growth in the program this year. $236 million of that is in support and spares. To that I am talking of the increase we are starting to buy for the 15 carrier air wings, the additional support that has to go on the three additional carriers. So I am here to tell you that there is minimal cost growth that is in the airplane relative to changes that we have had to make.

I would like to ask Commodore Weaver if he has anything he would like to add to that. He is the program manager and he watches cost like a hawk.

Commodore WEAVER. Yes, sir, thank you.

I think it is significant to recognize, as the admiral has indicated, under the previous December profile for escalation the program was at the $37.5 billion level. That was brought down by $2.5 billion due to the revised escalation rate that was submitted. Then by virtue of the fact we extended the program 1 year and then put in that new inflation rate which is slightly greater than the previous rate, slightly, we saw the $2.9 billion increase associated with inflation as indicated in the viewgraph.



Other costs of the program to date: 66 percent of the program is represented by escalation in inflationary dollars. Previous to that, two bar graphs back, it was 63 percent. The largest part of those dollars is the inflationary effect.

Mr. MAVROULES. Thank you.

Perhaps you might reflect for a moment on the question I asked you. What are the pilots saying when they take the airplane out and fly it around?

General WHITE. The pilots I have been talking to are the Marine test pilots. At Patuxent River, and for 1½ years we have had instructors in VFA-125 at NAS Lemoore. They are, like most young pilots, extremely enthusiastic about a new piece of equipment. But in this particular case the enthusiasm is almost boundless.

I mentioned the maintenance of this aircraft. One of the things that perhaps is not noticed is the fact that access doors are at shoulder height permitting a maintenance NCO to very easily and very quickly get at a part that he has to replace or repair, which is quite a bit different from many of the aircraft we have today where it takes stepladders and a tortuous route to get at a particular piece of equipment.

We have had several deployments from NAS Lemoore to the Marine Air Station at Yuma in the desert. In itself, that is not anything spectacular, but the fact is that when they got there in austere circumstances, the aircraft was able to fly 95 percent of its scheduled sorties, which is unusual.

The aircraft stands up very well to hard usage. As far as the pilot's, new pilot's, ability to assimilate the cockpit, the controls, the various instruments, because of the remarkable technology of the F/A-18 and its human engineering, we foresee no difficulty in training new pilots with the F/A-18.

I would also point out, getting back to the maintenance and the reliability, this is very important to the Marine Corps because if we are deployed to someplace in the world, we can almost guarantee the airfield we go to will not be in very good shape to support us.

Admiral MCDONALD. May I add to that, Mr. Mavroules.

Mr. MAVROULES. You may and then I have one last question after that.

Admiral MCDONALD. The last point that General White made is significant when you are talking to direct maintenance manhours per flight hour to fix an airplane. We are seeing that the F/A-18 during deployment at Yuma something like 8 maintenance manhours per flight hour as opposed to what we are seeing in the F-4 which is running 40-plus, the A-7 running in the high thirties, the two airplanes that are being replaced by F/A-18.

As far as performance is concerned, the Navy pilots are enthusiastic about it, the operational pilots, and I would like to get away from the test pilots who look at things a little bit differently. You are talking about the young people who are going to be flying the airplane in combat; they are highly enthusiastic about it throughout the whole squadron, as are the Canadians.

I would like to read one quick sentence from the Canadians who have just bought the airplane. We received a message from them that said:

The 433rd Fighter Tactical Squadron recently completed annual training at Yuma. Our ACM capability of the Hornet is best described as "eye watering". Easy to maintain, the aircraft far supersedes the F-5.

The Canadian pilots were surprised by the F/A-18 maneuverability and in all cases the F/A-18 was far superior to anything they expected.

Mr. MAVROULES. I remember last year Mr. Stratton, Chairman Price, and I talked to members of the Canadian Parliament. We tried to impress upon them the tremendous interest we had in the F/A-18.

We also demonstrated for them the great support in Congress when we defeated that amendment. Commonsense therefore would dictate if your maintenance cost will be reduced, we will have substantial savings in the long term.

I do have one final question.

I believe last year R. & D. funds were reduced by about $35 million. Will that have any effect on long-term costs for the F/A-18 fighter or at least do you have any information with relation to that at this point?

Admiral MCDONALD. Yes, sir. We have had to delay some of our testing that we had planned to do with that decrement of $35 million. But we have adjusted that so that we can continue with the minimal testing and still keep the program going. The program will stay on track, but we will have to defer some of the testing to a little bit later in the program.

The money that is in the 1983 bill accommodates that $35 million.

Mr. MAVROULES. Thank you. I have no other questions.

Mr. STRATTON. You talk about the Canadians. Aren't the Australians buying that too?

Admiral MCDONALD. Yes, sir, they are going to buy 75, Mr. Chairman.

Mr. STRATTON. What does the Canadian plus the Australian buy do to lowering the unit cost of the F-18?

Admiral MCDONALD. It has an impact. I will let Commodore Weaver discuss the details of that, if I may, sir.

Mr. STRATTON. Yes.

Commodore WEAVER. Thank you, Mr. Chairman.

The Canadian buy is 137 aircraft. It represents, in addition to our buy, about 24 aircraft per year.

The Australian buy is 75 aircraft, 18 of which show up in this budget year. Two of those aircraft are built here in the United States. The remaining 16 are assembled down in Australia. They do not have as much effect on the learning curve as those that are built here. In fact, they have a 50 or 56 percent effect on the learning curve.

The increased buy this year has dramatically affected the economies of scale on the procurement of the F-18. However, there are certain effects that have caused the unit costs to rise. There is the revised inflation rate that Admiral McDonald addressed on the F-14 which is true also on the F/A-18.

In addition, at this point in time we are ramping up the procurement rate to the 84 aircraft. We are presently funded for 72 aircraft per year in the rate tooling. We are increasing the rate tool-

ing from 72 to 132 because it is the most economical way to buy that increment.

We are amortizing the cost of that tooling which is about $1 million per aircraft over this buy. The combination of those two things have had a major effect of increasing unit cost of the aircraft this year.

There are two secondary effects, one being the fact that the FMS aircraft are not fully effective as I indicated.

Second, we are budgeting for firm fixed-price proposals from the contractor on the 1983 buy.

Mr. STRATTON. Mr. White.

Mr. WHITE. On the F-14 program the cost penalty associated with going from 30 to 24 aircraft is attributed to be $2 million a copy. In the case of the F-18 last year we had 63 aircraft. Last year counting the FMS cases the total production was 87 aircraft. This year counting the FMS cases it is going up to 24. Yet we are not deriving more than $1 million per copy savings from them?

Admiral MCDONALD. We would see, if you took out those effects I described to you, that is $1 million per copy for tooling plus increased inflation over what we saw in 1982, you would see $2½ million per copy increase.

We don't see the effect of the 24 aircraft. It is the 18 by virtue of the fact that some of them are being assembled in Australia.

Mr. STRATTON. Taking out 6 costs $2 million, adding 37 saves $2½ million ?

Admiral MCDONALD. You have to look at the cumulative rate. In the case of 18 we were buying at the rate of 87 the previous year. To show the full effect of the learning curve you have to show the whole quantity. You have economies of scale, but not a great effect on the learning curve.

Mr. STRATTON. This aircraft, as I said, gave us more trouble on the floor last year than any other aircraft and I would imagine there might a be a renewed effort, with all of the people who are gunning up as defense budget cutters this year. I would imagine the effort will be renewed fairly substantially. Last year the total program for the F-18 was 1,366 aircraft.

Now, according to the information that I have, the Navy has decided not to use the F-18 as a fighter on large deck carriers which means that it is a reduction of six squadrons and yet the total F-18 program remains unchanged at 1,366 aircraft.

So, where does the requirement come from for that figure?

Admiral MCDONALD. Mr. Chairman, one of the problems we were faced with was explaining the continuing change in numbers as far as the program was concerned and when the Marine Corps initially went with the AV-8B, we took 336 F/A-18's out of the program that were going to go to the Marine Corps and substituted AV-8B's for them.

At the same time, we were looking at the big deck carrier impact and, as you say, backing off on some of the numbers of fighter squadrons that would have been filled by the F/A-18. However, as long as we have the *Coral Sea* and *Midway* in the inventory, which will be until the late 1980 or 1990 timeframe, there will be a need for two fighter squadrons of F/A-18's on those two ships because those ships simply cannot accommodate the F-14.

So there will be four instead of six F/A-18 fighter squadrons. There will be 24, growing to 30 light attack F/A-18 squadrons. This is a plan which we will update, and this goes back to Mrs. Holt's early observation, the Naval Reserve squadrons may be assigned F/A-18's both in fighter and attack squadrons.

The same applies to the Marine Corps fighter squadrons in the reserve force. When you look at all of that, I can generate requirements that are greater than 1,366, but rather than alter the numbers each year to come in with another number, we decided that it would be easier, and we could justify maintaining that number at 1,366 so that on a year-by-year basis, the Congress could analyze what was happening to the cost. If I came in in 1982 and said we are only going to buy 1,044 and that we had reduced the program cost by $4 billion, some of the Members of Congress would have applauded, but the unit cost would have gone up for the airplane.

If I then said we are going to upgrade the Reserve Forces with F/A-18's that would drive that number back up and the cost would escalate with it also. So we have maintained a relatively stable inventory objective for comparative purposes and approximating the requirement that we see we will have in the future.

Mr. STRATTON. Let me pursue this a little bit here. You say you only have six squadrons that you are going to need, is that right? Four on four small carriers?

Admiral MCDONALD. Two fighter squadrons on each of the two smaller carriers, *Coral Sea* and *Midway,* sir. Then I have four total F/A-18 squadrons on those two carriers.

Mr. STRATTON. How many squadrons are you going to have? How many small carriers do you have?

Admiral MCDONALD. There are only two, sir.

Mr. STRATTON. Only two carriers, small carriers?

Admiral MCDONALD. There are only two of the *Midway-Coral Sea* class. The rest are known as big carriers. On those we will have F-14's.

Mr. STRATTON. This sounds even more absurd. This is a plane that is being touted as the Navy's top plane. I can recall the speech that I gave. People said "Why do we have to pay this tremendous cost?"

I said:

> This is the greatest plane that we have ever had. We are putting into it all of the new things. It is not like the F-16 where we have to add them on. We are building them in. We have all of the radar, we have all of the fire control equipment, we have all of this automatic stuff. This is the Navy's first-line aircraft, and we are building big carriers because that is going to be the basis of our 15 carrier groups to carry the battle out to the enemy in all three oceans.

Now the plane that we are buying as the first-line aircraft for the Navy's major component is not going to be used except on the small teeny carriers. How can you possibly justify that?

Then you tell us, "Yes, we are going to give them to the Reserve." We are building the most expensive aircraft in history for the Navy and suddenly when you have starved the Reserve to death you are going to give them to the Reserves so that you can explain a requirement of 1,366. That just does not make any sense, Admiral.

Admiral MCDONALD. May I try to explain it more articulately?

Mr. STRATTON. You had better because I am not going to go out there and make all of these speeches and then have the Navy cut the ground right from under me. This is just like the Marines. They want a modern fighter, but they are going to keep it so far back that you won't even see it at the front.

Now you want the most expensive airplane we have, the one that creates all the problems on the floor—I am the guy that has to take the heat for it—we are only going to use them on the small carriers, the ones that really can't keep up with the big ones, not the *Nimitz* and the *Rickover* and all of the others.

It just does not wash.

Admiral MCDONALD. Let me go back and explain it again, Mr. Chairman.

All the things you said about the statement you made last year are still true and probably even truer. On each of the big deck carriers, the *Nimitz,* the *Eisenhower,* the *Vinson* and the *Saratoga* and those size ships, there will be two F/A-18 squadrons. Those two squadrons will be filling the light attack role. They will also be capable of providing the battle group commander on those ships the ability to use them as fighter airplanes, which we have never had the opportunity to do before.

They will replace A-7E aircraft which are strictly bomber airplanes. When you have A-7E's you have a good bomber, but that is all you have.

Now, you will also have two F-14 squadrons, which in the outer air battle are par excellence. They are unsurpassed. The F/A-18 cannot do everything that the F-14 can do, nor was it ever intended to replace the F-14. You have two F-14 squadrons, two F/A-18 squadrons, an A-6 squadron and other miscellaneous squadrons on that aircraft carrier. That is the big deck.

Now, take the small deck carriers, *Coral Sea* and *Midway,* and you will have two fighter squadrons, F/A-18's and two light attack squadrons of F/A-18's. That is the Active Navy Force as we see it building in the near term. That gives the *Coral Sea* better outer air battle capability because it cannot handle the F-14 right now. It has F-4's on there as its fighter component.

Now, as far as the reserve update is concerned, our initial plan was to put the F/A-18's in to replace the A-7E's and the A-7E's in the active forces when replaced, would go to the Reserve Force. That will still take place, but as we continue to buy F/A-18's those A-7E's are going to run out of time and it would then be prudent to use the F/A-18 in the out year buy to update the Reserve Force.

If we are going to have an Active Reserve Force that is capable of doing something in wartime it has to be a reflection pretty much of what we have in the Active Force today.

Mr. STRATTON. Last year you requested 63 aircraft. We raised you considerably. Now you come in with 84. Why do you want 84 today when you only wanted 66 last year, particularly with the fact that they are not going to be used as fighters on the large deck carriers.

I am trying to get something I can use on the floor, that is all.

Admiral MCDONALD. If I could afford the quantity of airplanes that we would like to have, we would have been at 108 aircraft this year. Again going back to the basic affordability issue, although

that number is staggering and to come in here and tell you that $11 billion is not enough, I feel embarrassed to do that.

What I am telling you is that we can't afford to buy everything as we had programed. We have had to take some priority cuts and the F/A-18 is one of those, as is the AV-8B and as is the A-6 and the F-14, sir.

It is not a question of our lack of commitment to that airplane to provide the actual essentiality of the carrier air group modernization capabilities of the future.

Mr. STRATTON. You figure we would add them on anyway, so you would not have to request them, yourself?

Admiral MCDONALD. I can't afford them, sir. The 84 is what the budget could bear.

Admiral Seymour is saying that is the figure we had asked for last March.

Admiral SEYMOUR. You added additional money for long lead. I think that is what you are referring to. Is that correct, sir?

Mr. STRATTON. We added it in the House, but it got cut way back.

Admiral SEYMOUR. The data I have shows the Reagan amendment and the Carter budget. The budget you finally addressed last year, I believe we had asked for 63 in 1982 and indicated we intended to ask for 84 in 1983 which we are now doing.

I suspect the Carter budget, which I don't have the data on, may have had a different number.

Mr. STRATTON. We went up to 84, but then they knocked it down to 63 in the conference.

Mr. Mavroules.

Mr. MAVROULES. I think the chairman makes a valid point. He has taken an awful lot of heat on the floor. I am going to say this to him.

He does not have a monopoly on all the heat because I took my share of the heat, too. Without his assistance on the floor we might have had a difficult time. I think the scenario last year was that the Senate that time tried to cut it back to 58 or 59 planes.

On this side over here because of the projected proposals way back, not last year, but 3 or 4 years ago when you should have been asking for 108 airplanes per year, and we go back to that time, and because of the limited funds we had in relation to the budget we raised that, this committee went from 63 to 62 up to 84. I moved that we make it 108. The chairman amended that to read 83 or 84 airplanes.

I think what the chairman is trying to say is when we get on the floor, Admiral, we feel this will be a major issue because there are a lot of dollars here, an awful lot of dollars. Therefore the more information we can have as a committee we can argue the point more effectively on the floor of the House.

We are successful, but remember this, and I am going to talk to you philosophically, if I may, the Congress is looking out there to cut $40 or $50 million and each and every item will be looked at very carefully, including defense. The better responses we have, the more facts we have from your side, the greater argument we can put forth for you.

I just want to commend the chairman for his performance on the floor last year. It was superb.

Admiral McDONALD. I thank you, sir.

Mr. STRATTON. Thank you.

Mr. McCurdy.

Mr. McCURDY. Admiral, did I understand you to say that there was a change in requirement on the F/A-18 by the reduction in the use on the carriers. Would you point out where you came up with the additional 300-some planes for the Reserve.

Admiral McDONALD. Mr. McCurdy, the change occurred when the Marine Corps purchased, or we purchased, the AV-8B for their light attack aircraft.

Prior to that period of time, the Marine Corps' light attack squadrons were going to be manned with F/A-18's.

Mr. McCURDY. How many was that?

Admiral McDONALD. 336.

Mr. McCURDY. That was out of your total of 1,366?

Admiral McDONALD. Yes, sir.

Mr. McCURDY. When they decided to use the AV-8B instead, you had 336 aircraft there not requested. They changed the requirement and you said they were going to go to the Reserve, is that correct?

Admiral McDONALD. That is part of the rationale. At the same time we were beginning to look to the 15 carrier battle groups which generate 6 more attack squadrons for use and that plus the attrition that you have to put into it, the pipeline aircraft that support the 15 carrier air wings, drives that number up.

Then, at the same time, we looked at potentially upgrading the capability of the Reserve Force.

Mr. McCURDY. Tell me where we are on that 15th carrier. Are we going to have the additional carriers?

Admiral McDONALD. Yes, sir, the Secretary of the Navy, the Chief of Naval Operations and the Secretary of Defense have articulated that the Navy is building to a 15 carrier battle group Navy.

It seems inconceivable that we would build 15 carriers and not have the appropriate number of air wings to go on them.

Mr. McCURDY. You are saying that rather than warehousing them you are going to keep them in the Reserve until the carriers are built?

Admiral McDONALD. No, sir. You have to realize that it takes about 2 years from the time you authorize moneys for the procurement of these aircraft before we see an airplane come off the line.

With the moneys you are appropriating in 1983 we are not going to see that airplane until about 1985. So, we will have the *Theodore Roosevelt* in the inventory in the late 1986 and early 1987 timeframe.

With the request that is before the Congress this year for 2 additional carriers, the 72 and the 73, you will be achieving those kinds of standup carriers and carrier air wings again in 1989-91.

Mr. McCURDY. My question is: If you get these new carriers are you going to take the 336 designated for Reserve and assign them to the carriers or are you going to ask for additional airplanes?

Admiral McDONALD. No, sir. The plan will accommodate up to the 15 carrier air wings and still provide for upgrading of the Reserve.

Mr. McCURDY. If you did not have the 336 aircraft and you had the 1,033 aircraft you have there, would that still meet your requirement for the carriers?

Admiral McDONALD. No, sir. It would not.

Mr. McCURDY. My basic question is: Are the 336 designated to go to the Reserves or are they going to go to the carriers?

Admiral McDONALD. I think the answer is that as you replace the 336 with 6 squadrons of 12 airplanes per squadron that is 72 plus the pipeline that goes in there so you probably create twice as many. There are probably 150 of those that will go to the increased carrier requirements.

The other 150-plus would then go to the Reserve Forces, sir.

Mr. McCURDY. Then it is not the 336 going to the Reserves?

Admiral McDONALD. No, sir, not at all. The Reserves don't have that large a requirement. There are only four Reserve fighter squadrons and two Marine fighter squadrons and six Reserve attack squadrons.

Mr. McCURDY. If the carriers were not approved, the 72 and 73, how many squadrons or how many airplanes are you talking about for those two?

Admiral McDONALD. We would still build to 14 carrier air wings. You could probably create a case where the requirement would drop off some.

Mr. McCURDY. If the two were not approved?

Admiral McDONALD. If the two were not approved.

Mr. McCURDY. Thank you.

Mr. WHITE. If you take the *Coral Sea* and *Midway* out of the inventory in 1990, how many carriers do you have to buy to get to 14 carriers counting the 2 that are in there this year?

Admiral McDONALD. May I take *Coral Sea*? As I see it, that is our plan right now. We plan to keep *Midway* because of her more recent refurbishment. With CVN 71 coming in, the *Theodore Roosevelt* coming in in the 1986–87 timeframe, that will drive us to 15 total carriers. If you take *Coral Sea* out that gives you 14, then you need the other 2 to come in to replace that force.

Mr. WHITE. You need four more, two this year and two more?

Admiral McDONALD. The two this year and possibly one more.

Mr. STRATTON. Let me go back to the F–14. I wasn't here when we were discussing that.

Why do you go down to 24 when we have consistently urged an economical production rate of 30? We have it up to 30, but this year you put it down to 24.

Admiral McDONALD. Yes, sir, Mr. Chairman. That again was a matter of trying to fit everything in the budget and the six F–14's that we dropped off were significant, and we tried to spread that so that we could keep the other programs going.

Mr. STRATTON. How much would six more cost?

Admiral McDONALD. At the rate that they are we are talking probably about $179 million.

Mr. STRATTON. $179 million?

Admiral McDONALD. Yes, sir.

Mr. STRATTON. This is your first-line fighter. This is the most important aircraft then in the fleet for the big carriers, is that right?

Admiral McDONALD. It is in the fighter role, Mr. Chairman. You have to look at them separately. It does what we want it to do in the fleet air defense role better than any other aircraft we have. It does not do air to ground or that type of strike escort.

Mr. STRATTON. That is the primary job, isn't it?

Admiral McDONALD. Only in the case of air defense, sir, not in the case of power projection ashore in support of the Marines or in support of attacking targets on enemy mainland.

Mr. STRATTON. Your major attack aircraft is the A-6, is that right?

Admiral McDONALD. In all weather situations. The F/A-18 is our airplane that we look to, to do a lot of things that the A-6 cannot do.

Mr. STRATTON. But, it does not have the attack capability of the A-6, does it?

Admiral McDONALD. Yes, sir.

Mr. STRATTON. It does not have the ordnance?

Admiral McDONALD. It carries the same ordnance, not in the same numbers as the A-6. It could not carry the amount of ordnance that the A-6 could carry, Mr. Chairman.

Mr. STRATTON. That is the point. The bigger the bomber the more it can carry. This does not carry as much as the A-6?

Admiral McDONALD. No, sir, it doesn't, but it survives a lot better than the A-6. The A-6 in the same environment of the F/A-18, today, is going to suffer significantly more attrition than the F/A-18 will, sir, due to just the maneuverability and the speed of the airplane, and the other things that go in, to make the airplane a more reliable airplane in the survivability arena.

Mr. STRATTON. Let me just ask a couple more questions.

You have the Orion in here for six. Is that enough to keep the line open?

Admiral McDONALD. Yes, sir. That will keep the line going. It will continue updating our P-3C force. We had planned to upgrade the ASW capabilities of the maritime patrol squadrons with all P-3C which are, as you are well aware, sir, is an automated aircraft for prosecuting submarines.

With the increased threat we see the Soviets going to sea in their new submarines, this is a very vital long-range ASW aircraft.

Mr. STRATTON. There isn't any other, is there?

Admiral McDONALD. Not of long range. We have the S-3 aboard the carrier and we are introducing the LAMPS MK-III as an outpost type.

Mr. STRATTON. The submarine threat is increasing, so we reduce it from 12 to 6?

Admiral McDONALD. Force levels do not decrease, Mr. Chairman. We just do not reach the modernization as early as we had initially planned.

Mr. STRATTON. I know, but we are not shutting down the line?

Admiral McDONALD. No, sir.

Mr. STRATTON. You have six in there to keep the line going. What does that add to the cost by buying them at that rate?

Admiral McDONALD. It adds $6.6 million per copy, sir.

Admiral SEYMOUR. Due to the quantity reduction. It adds to the total budget cost by not shutting the line down.

Mr. STRATTON. This is about $9 million a copy. Six times nine is 54, is that right?

One other thing. We put into the law last year that each service was to advise us of what you were going to be turning over to the Reserve. You have already indicated that you are turning over some F-18's. Do you have a list of what you are providing to the Reserve and Guard Forces?

Admiral MCDONALD. Yes, sir, we will provide that plan. The plan is in the developmental stages right now as to when we would phase the F/A-18 into the Reserve Force. The current plan shows us relieving the A-7B's which are in the Reserve Force with A-7E's. It shows us updating the P-3B's with TACNAVMOD which updates that airplane considerably so that the Reserve Forces in the maritime patrol can operate with Active Duty Navy Forces.

Mr. STRATTON. The law says you are supposed to provide that by the 15th of February, not only what you are going to give them this year, but I think the next 3 years.

Admiral MCDONALD. There is nothing in the next 3 years, Mr. Chairman, that is going to affect the Naval Reserve other than what is planned. When we are talking to F/A-18 for the Naval Reserve you are talking probably in the mid-to-late eighties before you receive that.

Mr. STRATTON. The authorization bill directed each service to supply as of the 15th of February to the Secretary of Defense a complete list of what you were going to turn over to the Reserve and National Guard in the ensuing 3 years, 1983, 1984, and 1985. We put stuff in the bill last year for the Reserve to the total of about $1 billion for all the services. Then it got knocked out, virtually all of it got knocked out when the President wanted to cut the budget by $2 billion.

If you don't have that then the Navy is in violation. We may have to send you to jail. I would hate to do that. But we have to be pretty strict in this committee, you know.

Admiral MCDONALD. Yes, sir. I understand that. We do have, as far as updating equipment in the Reserve Force within the period of time that you are talking to, the initiative to buy used C-9 logistics aircraft. That has been revised.

Mr. STRATTON. The point is that the committee, as we mark up the bill should know exactly what you propose to do and then if we don't like it we can add something more.

Admiral MCDONALD. Yes, sir.

Mr. STRATTON. Take out of the hide of the regulars most likely.

Admiral MCDONALD. In the F/A-18——

Mr. STRATTON. I am not talking about the F/A-18. Whatever it is, you can give them C-1's if you want to. We need a list of what is going to be provided to the Reserve in each 1 of those 3 years.

Admiral MCDONALD. We will see that you have it, sir. I am sure that has been done in accordance with the directive.

Mr. STRATTON. If you have sent it to the Secretary of Defense, then we should have gotten a copy over here.

Admiral MCDONALD. Yes, sir.

[The following information was received for the record.]

PROCUREMENT

The following is a summary of flow of aircraft to be provided to Naval Air Reserve. The information was extracted from the Force Readiness Report submitted 21 January 1982:

	Fiscal year		
	1983	1984	1985
E–2C	0	4	0
SH–2F	0	0	12
C–9	0	2	2
Used DC–9	2	0	0
A–7E	0	[1] 24	12
P–3B	8	10	9

[1] This number is in error on the report and in fact should read zero (0).

Mr. STRATTON. Are there any other questions?

I think we have all of the data that we need, haven't we, in the record?

Mrs. BYRON. I have one question.

Mr. STRATTON. Go ahead.

Mrs. BYRON. General White, here we go again.

The funds were provided in 1982 to initiate a program for modification of the RF–4B aircraft to incorporate a TEREC system. The side looking radar data link, can you give me an update on the program and what impact it will have on Marine Corps tactical capability.

General WHITE. The TEREC, which is a system that is placed aboard our RF–4B reconnaissance aircraft, detects enemy threat emitters and records them. The same aircraft has side looking radar, but that side looking radar is of no use to the commander unless that information is data linked back to the decision point. Both systems acting together provide the commander with almost instantaneous information to make a decision.

Money provided in 1982 will provide for one complete system, that is both the TEREC and the data link for the side looking radar. The Marine Corps requirement is for four systems, one for each one of our Marine Amphibious Forces.

Mrs. BYRON. This is an integral part of your tactical program; is that right?

General WHITE. That is correct.

Mrs. BYRON. We funded one system last year? I thought we funded three?

General WHITE. No; one complete system. There are various parts to it. I am oversimplifying it now. But one complete deployable system, both TEREC and data link. So we have, as we see it, to complete our requirement to take care of three MAF's plus a training logistic base, we have need for three more of these systems.

Of course, I might add that the U.S. Air Force also uses these.

Mrs. BYRON. But there are no funds this year for that program?

General WHITE. That is my understanding.

Mrs. BYRON. What amount of funds will be needed to keep this program moving along?

General WHITE. I could not answer that, but it is a substantial amount. I will be happy to supply that for the record for you.

[The following information was received for the record:]

RF-4B TEREC

The amount of funds required for the TEREC/UPD-4 Data Link program in fiscal year 1983 is $25 million.

Mr. STRATTON. Mrs. Holt.

Mr. White.

Mr. WHITE. One question.

When the Commandant of the Marine Corps, was before the full committee on the 8th he made a statement and said that modernization of Marine aviation was a major goal of his and that his number one priority was the development and acquisition of a new helicopter to replace the aging fleet of medium lift helicopters, the CH-47's and the CH-53A and D models. He pointed out due to funding constraints he was going to lift the requirement in the near term until introduction of technology replacement. He wanted to augment what he called the dwindling assault helicopter threat with additional shelf helicopters.

He said funding requested in 1983 will allow us to initiate this fleet augmentation program. When Dr. DeLauer's assistant, Mr. Molonelli was before the R. & D. subcommittee they asked him about $9½ million R. & D. funding for the near term helicopter, the HXM. He said R. & D. money was not required because there were no procurement plans.

I would like to ask, taking General Barrow's observation and Mr. Molonelli's, how does the Marine Corps plan to solve the near term assault helicopter shortage?

General WHITE. The problem is accurately described. We do have a shortfall right now and the shortfall is our transport helicopters will get progressively worse due to old age and attrition as we move through this decade and certainly will get worse in the early 1990's.

We have been working with the Navy in an attempt to find a suitable gap filler which will be an off-the-shelf helicopter. That is an aircraft that is now in production or one that could be put in production with a minimum amount of development funds.

That decision is going to be made sometime this spring in time for insertion into the next defense budget. That is my understanding of how that gap filler program will be taken care of.

I would like to underscore that it is in fact the commandant's number one priority for Marine aviation.

Mr. WHITE. There is nothing in 1983 though?

General WHITE. The funding in 1983 I believe is $9 million, $9.5 million. I am sorry that I am not more precise, but I think it is in the vicinity of $9.5 million, which we see as being used to solve both problems.

In neither case, in the JVX nor in the gap filler helicopter, are we ready to absorb large sums of money. So I look at that from the standpoint of using that money as a way toward beginning to resolve both of these problems. How are we going to divide that money up, I am not sure.

Mr. WHITE. A witness from Dr. DeLauer's office just testified this week the money was not needed because there was no procurement.

General WHITE. I will accept the hint. Thank you.

Mr. STRATTON. Any other questions? If not, we will have to adjourn.

We haven't had an opportunity to have Admiral Seymour and Admiral Hostettler testify on the missiles, but I think we probably have enough in the record to be able to deal with that matter. We have a very tight schedule for getting the bill actually marked up and that is the reason we have to cut the hearings a little bit short.

Gentlemen, I want to thank you very much for your patience and your testimony.

Admiral McDonald, do you have something more to add?

Admiral McDONALD. Mr. Chairman, I have a statement which is "Other Procurement, Navy" which really should be entered into the record to make the record complete because it has some ancillary dollar information.

Admiral Hostettler has his statement on the WPN if they could be entered into the record.

Mr. STRATTON. Yes, without objection any of those additional statements that will give us the background will be included in the record without objection.

WRITTEN STATEMENT OF REAR ADM. S. J. HOSTETTLER, DIRECTOR, SURFACE COMBATANT SYSTEMS, OFFICE OF THE CHIEF OF NAVAL OPERATIONS, DEPARTMENT OF THE NAVY

OTHER PROCUREMENT, NAVY (OPN) APPROPRIATION

The total fiscal year 1983 budget request for the Other Procurement, Navy (OPN) appropriation is $3,970.2 million. Of this amount, $668.1 million (16.8 percent of the total) relates to Tactical Aviation programs. This $668.1 million includes funding for five categories of items: $59.9 million for Aviation Communications and Electronics Equipment, $183.6 million for Sonobuoys, $207.9 million for Air Launched Ordnance, $192.7 million for Aircraft Support Equipment, and $23.9 million for Spares and Repair Parts.

AVIATION COMMUNICATIONS AND ELECTRONICS ($59.9 MILLION)

The funds in this category will provide for the procurement of equipment to be installed at Navy and Marine Corps aviation shore activities, shipboard aircraft control equipment, and secure identification systems. These funds are found in P-1 line items numbered 125 through 136 in Budget Activity 2 of the OPN appropriation. The three P-1 line items having the highest dollar value are MATCALS, TACAN, and FACSFAC. These three programs account for $42.5 million of the $59.9 million requested for this category.

The Marine Air Traffic Control and Landing System (MATCALS) will provide a fully automatic air traffic control and automatic landing system for use by the Marine Air Traffic Control Squadrons at Expeditionary Airfields. The equipment will significantly increase the safe controlled landing rate at the tactical Expeditionary Airfields. This is basically an extension of the capability currently available on aircraft carriers for the landing forces ashore. The fiscal year 1983 budget request of $20.7 million will provide for the procurement of three Command and Control Subsystems ($16.0 million) and for the procurement of replacement equipment for the AM/TSQ-18 Landing Control System ($4.7 million) which will be used with the MATCALS when fielded.

The Tactical Air Navigation (TACAN) program provides for the procurement of the AN/URN-25 TACAN, the basic short distance navigation system in use by the Navy. The fiscal year 1983 budget request of $12.2 million is for the procurement of sixteen AN/URN-25 shore beacons to replace old equipments at Naval Air Facili-

ties and fifteen AN/URN-25 ship beacons to replace old equipments as part of the Fleet Modernization Program (FMP).

The Fleet Area Control and Surveillance Facilities (FACSFAC) were established to provide such services as scheduling of surface, sub-surface, and air operations in off-shore operating areas and providing surveillance control of air operations and related training evolutions such as Ground Control Intercept (GCI) and some air combat manuevers. The basic purpose of FACSFAC is to prevent mid-air collisions between military and civil aircraft and to guard against restrictions caused by increasing encroachment of commercial interests. The fiscal year 1983 budget request of $9.6 million provides for the continued procurement of equipments to upgrade the Navy's FACSFAC capability.

The remaining $17.4 million requested for Aviation Communications and Electronics includes such items as the procurement of equipment to modernize the Navy's Automatic Carrier Landing Systems, the procurement of Radar Air Traffic Control equipment and other Air Station Support Equipment, and the continuation of the MK XII AIMS IFF program which is a Department of Defense tri-service program to provide a secure identification system for military use on all major combatant ships, selected auxiliaries, patrol craft, and selected Coast Guard ships.

SONOBUOYS ($183.6 MILLION)

The funds in this category will provide for the procurement of our expendable sonobuoys, the critical acoustic sensors for the Navy's airborne anti-submarine warfare (ASW) mission scenario. These funds are found in P-1 line items numbered 209 through 217 in Budget Activity 3 of the OPN appropriation. The fiscal year 1983 sonobuoy procurement program has been computed considering the number of ASW carrier air groups and shore based ASW patrol squadrons to be supported, actual and planned peacetime usage for these forces, and the necessary training allowance requirements. User aircraft include the S-3A, P-3, SH-2D, and SH-3 series. Three of these sonobuoys, the AN/SSQ-53 ($87.4 million), the AN/SSQ-62 ($30.8 million), and the AN/SSQ-77 ($53.3 million) account for the bulk of the funding.

The AN/SSQ-53 DIFAR is a passive directional sonobuoy used during the target localization phase of the air ASW mission. The $87.4 million requested in fiscal year 1983 will provide for the procurement of 209,252 AN/SSQ-53B sonobuoys, the first full scale production of this particular version of the AN/SSQ-53. The AN/SSQ-53B includes tri-depth, multi-channel, and electronic function selection and will replace both the AN/SSQ-41B and the AN/SSQ-53A sonobuoys now in the Navy's inventory.

The AN/SSQ-62 DICASS is an active directional sonobuoy which will replace the AN/SSQ-47 and the AN/SSQ-50 sonobuoys in the Navy's inventory. The $30.8 million requested in fiscal year 1983 will provide for the procurement of 16,100 AN/SSQ-62B sonobuoys. The AN/SSQ-77 Variable Line Array DIFAR (VLAD) is the Navy's newest passive directional sonobuoy. The $53.3 million requested in fiscal year 1983 will provide for the procurement of 35,870 AN/SSQ-77 sonobuoys.

AIR-LAUNCHED ORDNANCE ($207.9 MILLION)

The funds in this category will provide for the procurement of level of effort air munitions such as bombs, rockets, machine gun ammunition, flares, chaff, and marine location markers. It also includes other level of effort items such as jet assisted take off (JATO) rockets, aircraft escape rockets, cartridges, and cartridge actuated devices (CADs). These funds are found in P-1 line items numbered 218 through 234 in Budget Activity 3 of the OPN appropriation. The budgeted funds are in support of both peacetime training consumption and war reserve requirements.

The amount of $62.4 million is requested for the procurement of general purpose, special purpose, and practice bombs. $18.4 million of this request is for MK-82 and MK-83 general purpose bombs, miscellaneous component parts such as conical fins, and associated production support. $4.3 million is for the procurement of Laser Guided Bomb Kits which will be used to provide terminal guidance to MK-82, MK-83, and MK-84 general purpose bombs. $13.2 million will be used to continue the modernization of the Navy's inventory of Walleye, an air-to-surface TV guided glide bomb. $26.5 million is for the procurement of MK-76, MK-106, and MK-80 series practice bombs and associated marker signals.

The amount of $17.9 million is requested in fiscal year 1983 for the procurement of air-to-ground rockets. $7.4 million is for the ZUNI 5.0 Inch Wrap-Around Fin Rocket, while $10.5 million is for the 2.75 Inch Folding Fin Rocket Motor and Launcher.

The amount of $19.6 million is requested in fiscal year 1983 for the procurement of 20mm and 25mm aircraft machine gun ammunition. $2.2 million is for 20mm target price ammunition, while $11.4 million is for the initial production of 25mm target practice ammunition used by the AV-8A Harrier aircraft. $6.0 million in fiscal year 1983 is for the procurement of production tooling and test equipment for the 25mm ammunition program.

The fiscal year 1983 budget request contains $25.7 million for low rate initial production of the Bigeye Chemical Weapon. $8.0 million of the $25.7 million budget request is required to procure special tooling and test equipment, while the remaining $17.7 million is for the production of 450 Bigeye units.

The remaining $82.3 million requested in fiscal year 1983 includes funding for a number of different level of effort items. $17.7 million is for airborne expendable countermeasures such as chaff, infrared flares, and expendable jammers. $24.5 million is for cartridges and cartridge actuated devices such as impulse cartridges used to eject air launched weapons. $14.9 million is for jet assisted take off (JATO) rockets used to launch aircraft and targets and to propel sleds used in testing. The other $25.2 million is for aircraft escape rockets, parachute flares, marine location markers, Defense Nuclear Agency material, and miscellaneous air launched ordnance.

AIRCRAFT SUPPORT EQUIPMENT ($192.7 MILLION)

The funds in this category will provide for the procurement of a diverse group of equipments in support of naval aviation. These funds are found in P-1 line items numbered 235 through 253 in Budget Activity 3 of the OPN appropriation. Included in this category is Lamps MK III shipboard equipment ($81.7 million), weapons range support equipment ($38.7 million), aircraft launching and recovery equipment ($16.1 million), airborne mine countermeasures equipment ($16.7 million), and miscellaneous aircraft related items ($39.5 million).

The amount of $81.7 million is requested for Lamps MK III shipboard equipment. A significant portion of the Lamps MK III shipboard equipment is being procured in the Shipbuilding and Conversion, Navy appropriation as part of the construction cost of new ships (CG-47 class and FFG-7 class). The Lamps MK III equipment being procured in the OPN appropriation is that equipment which is to be installed in existing ships being backfitted with the Lamps MK III weapon system (DD-963 class, DDG-993 class, FFG-7 class, and CG-47 class). Each ship set of equipment will consist of (1) a helicopter landing system, (2) an AN/SQQ-28 electronic sonar signal processing system, and (3) an AN/SRQ-4 shipboard terminal data transmission device. Nine ship sets are budgeted in fiscal year 1983.

The amount of $38.7 million is requested for weapons range support equipment. $29.6 million is for the procurement of equipment to collect, transmit, process, and display data collected during exercises on the various training ranges such as the Atlantic Fleet Weapons Training Facility (AFWTF), the Barking Sands Underwater Range (BSURE), and the Pacific Missile Range Facility (PMRF). $6.6 million is for the procurement of drone control systems, and $2.5 million is for the procurement of radar bomb scoring systems which will provide no-drop evaluation of the striking proficiency of various weapons systems in a combat environment.

The amount of $16.1 million is for the procurement of aircraft launching and recovery equipment such as catapults, arresting gear, and visual landing aids for aircraft carriers and other aircraft capable ships ($12.3 million), airfield arresting gear ($2.1 million), and equipment in support of the Marine Corps tactical Expeditionary Airfields ($1.7 million).

The $16.7 million requested for airborne mine countermeasures is for the procurement of various mine countermeasure equipments, such as the AN/AQS-14 minehunting sonar, to be operated by RH/CH-53D helicopters.

The remaining $39.5 million is for the procurement of Carrier ASW Module equipments ($7.6 million), aircraft rearming equipment ($4.0 million), survival radios ($7.5 million), meteorological equipment ($10.5 million), ordnance stock surveillance equipment ($3.8 million), and other items ($6.1 million).

SPARES AND REPAIR PARTS ($23.9 MILLION)

$23.9 million is requested for the procurement of spares and repair parts to support aviation equipments funded in the OPN appropriation. These funds are found in P-1 line item number 254 in Budget Activity 3 of the OPN appropriation.

Admiral McDONALD. We would also like to thank you for your patience as we laboriously go through the task of trying to describe to you those things that appear so obvious to us in our day-to-day

work. We know how difficult it is at times to get all of these programs together. We appreciate your time very much.

Mr. STRATTON. Patience is probably not the right word. We do naturally want to do what is best for the Navy, but sometimes we get some problems on the floor and we need the material to answer the questions.

Thank you very much.

Admiral MCDONALD. Thank you, sir.

[The following questions were submitted to the witness to be answered for the record:]

F-14/F/A-18

Chairman STRATTON. Last year the Navy position was to maintain 18 squadrons of F-14's—9 Air Wings—and to use the F/A-18 as the fighter aircraft in all other air wings. The Navy has now decided not to use the F/A-18 as a fighter except on small carriers—a complete abandonment of the original justification for the F/A-18. What caused this change of direction, especially since the new F-14's are going to cost $23 billion?

Admiral MCDONALD. Although the F/A-18 has a strike escort capability comparable to that of the F-14 and it will be used to augment the F-14's in AAW, the Navy's position has been that the F/A-18 should not replace the F-14 in its Fleet Air Defense role, except where absolutely necessary. The original F-14 program included 24 squadrons. Procurement declined to 18 squadrons because of affordability. The change back of 24 squadrons of F-14's this year is based upon a revalidation of our original requirements. Our commitment and experience in the Indian Ocean, our planned increase to 15 Battle Groups, [deleted] dictate the need for 24 F-14 squadrons. We do not see this decision as an abandonment of the original justification for the F/A-18.

F-14

Chairman STRATTON. Congress provided long lead funds for 27 F-14's last year. Your procurement profile includes an unexplainable dip to 24 aircraft between 30 a year rates 1982 and 1984. If the F-14 is as important as the Navy says it is, why are you reducing procurement this year with 20 percent real growth in the APN account?

Admiral MCDONALD. The 24 aircraft in fiscal year 1983 is simply a matter of budget priorities. In spite of the approximately 20 percent real growth in the APN account, the acquisition profiles submitted are believed to be the optimum balance among the numerous important programs.

Chairman STRATTON. Why wouldn't the original 18 squadron force structure be adequate to meet the threat if the Navy redistributes its forces, to provide at least one squadron each large deck carrier augmented by F/A-18's? The Soviet Union isn't going to send its naval Backfire force everywhere at the same time. You knew about the naval Backfire last year, how were you going to handle the threat then?

Admiral MCDONALD. As stated previously, we have re-examined our requirements and believe the increase in F-14 squadrons is urgently needed. [deleted.]

Chairman STRATTON. To handle the Backfire bomber threat in North American air defense, the Air Force proposes to rely upon AWACS and the F-15 armed with the Sparrow missile. If this is sufficient to handle the Backfire threat, why does the Navy need additional F-14's with Phoenix missiles to do the job? Why can't it be done with E-2C's and F/A-18's with Sparrows?

Admiral MCDONALD. Defending a Carrier Battle Group from a Backfire attack is very different from defending North America. Although we can use our mobility, deception, etc., to make enemy targeting difficult, if he should attack we are likely to be much closer to his air bases. This means we may have less warning and be required to intercept the Backfire much closer to his weapons release point. In this environment, we believe the F-14/Phoenix combination with its multi-shot capability and superior ECCM performance to be essential.

F/A-18 PROCUREMENT

Chairman STRATTON. Last year the F-18 total program was 1366 aircraft. Now the Navy has decided not to use the F-18 as a fighter on large deck carriers—a reduction of 6 squadrons—but the total F-18 program remains unchanged at 1366 air-

craft. Looking at the F-18 force structure plans, I see four Navy fighter squadrons, 9 Marine Corps fighter squadrons, 16 light attack squadrons and 1 TACA squadron. If I add up all those requirements I get 435 aircraft including float aircraft. Allowing 100 for the training base and assuming 100 percent attrition or a 20 year period, I still come up with only a little over 1000 aircraft. Where does the requirement for 1366 come from? Apparently, it is insensitive to changes in the force structure.

Admiral McDONALD. The previous F/A-18 procurement objective of 1366 aircraft was based on a requirement to support the following force structure through [deleted] the Extended Planning Annex end year when this program was last restructured (fiscal year 1979):

Force element	Number squadrons	Authorized aircraft	Program procurement
USMC VMFA			
USMC VMA			
USN VF			
USN VA(L)		[Deleted.]	
USN VFP			
USMC VMFP			
USMC TACA			
			1,366

The aircraft were to be utilized as follows:

Squadron authorized aircraft	
R.D.T. & E. aircraft	
Fleet readiness training aircraft	[Deleted.]
Total operating aircraft	
Total pipeline aircraft	
Total attrition aircraft	
	1,366

To simplify tracking F/A-18 costs and the requirement to modernize reserve forces were two of several factors considered in the decision to hold the procurement objective constant. This procurement will support the following force structure through [deleted].

Force element	Number squadrons	Authorized aircraft	Program procurement
USMC VMFA			
USN VF			
USN VA(L)			
USN VFP			
USMC VMFP		[Deleted.]	
USMC TACA			
USNR VF			
USNR VA(L)			
USNR VFP			
USMCR VMFA			
			1,366

These aircraft will be utilized as follows:

Squadron authorized aircraft	
R.D.T. & E. aircraft	
Fleet readiness training aircraft	[Deleted.]
Total operating aircraft	
Total pipeline aircraft	
Total attrition aircraft	
	1,366

Not addressed in this program are force sustainability requirements beyond [deleted].

Chairman STRATTON. In fiscal year 1982, the procurement unit cost of the F/A-18 was $32 million on 63 aircraft. This year it is $31.3 million based upon Navy procurement of 84 aircraft. That is a favorable trend. But when you take FMS cases into consideration, 1983 total production is up from 87 to 124—42 percent—and we are now in the 5th year of production where we should be getting down the learning curve as well as deriving economies of scale. Would you provide a detailed explanation showing the cost reduction resulting from FMS and a matrix relating the 1982 unit cost to the 1983 unit cost?

Admiral MCDONALD. FMS Impact: Both the fiscal year 1982 and fiscal year 1983 budgets contain cost benefits resulting from FMS aircraft. The fiscal year 1982 budget reflected the benefits of 24 Canadian F/A-18's and resulted in a total manufacturing load of 87 aircraft. The fiscal year 1983 budget reflects the similar benefits of an additional 24 Canadian aircraft, plus the added benefits of 18 Australian F/A-18's. Under the terms of the Australian sale only 2 of the 18 aircraft are fully assembled in the U.S.; the balance are shipped to Australia for completion and final assembly. For this reason the total equivalent manufacturing load in fiscal year 1983 is 118 aircraft versus the fiscal year 1982 total of 87 aircraft.

Learning: The learning curve results from comparing the man-hours required for successful performance of the same work. Experience indicates that each time a job is repeated, fewer hours are required for completion. The pattern of reduction very closely approximates the exponential equation $Y=KX^n$ where Y=man-hours; K=man-hours for the first unit; X=quantity of units; n=a constant related to level of learning.

It is the characteristic of the equation that as the quantity is doubled, the average man-hours experienced are reduced by a constant ratio. As an example, if a program is experiencing 80 percent learning (n=.321928), and 100 hours were required for the 50th unit, then only 80 hours would be expected to be required for the 100th unit, and 64 hours for the 200th unit. Learning being experienced in the F/A-18 program in terms of man-hours is about 90 percent for the engine and 78 percent for the airframe at MCAIR. Learning for the airframe at Northrop is not defined at this time. The initial man-hours required at Northrop were too high and learning at present is much better than can be expected over a long time frame. Learning theory is a factor used when performing cost analysis of recurring activities; however, actual costs are also influenced by other factors, such as material costs, changing labor rates, and non-recurring requirements such as tooling and manufacturer's overhead. These factors do not show the beneficial trends that man-hours do, as a function of procurement rates.

F/A-18 UNIT COST MATRIX

Category	Fiscal year 1982	Fiscal year 1983
Recurring flyaway	22.528	24.025
Tooling	.210	1.085
Support	9.321	6.242
Total	32.059	31.352

Flyaway: The recurring unit flyaway cost was increased to reflect both higher OMB inflation rates and contractor production data for the fiscal year 1979 and 1980 aircraft. The fiscal year 1979 contract has reached ceiling and the fiscal year 1980 contract is expected to approach ceiling. The unit cost also includes an increase to fund a firm fixed price contract in fiscal year 1983.

Tooling: Economic funding for non-recurring rate tooling varies from year to year based on the annual aircraft procurement profile, until sufficient tooling is acquired to support the maximum aircraft production rate.

Support: Support funding remained relatively constant from fiscal year 1982 ($587 million) to fiscal year 1983 ($524 million) but, due to the increase in aircraft quantity, it shows a significant unit cost reduction.

FMS: The fiscal year 1982 budget contains a unit cost benefit of $0.763 million due to the Canadian aircraft. The fiscal year 1983 budget contains a unit cost benefit of $0.882 million for sales to both Canada and Australia.

SH-60B

Chairman STRATTON. I understand that the present SH-60B procurement schedule will result in the production of aircraft in the 1983 budget as much as two years before the Navy is ready to absorb them with its planned Lamps III ship stand-up schedule. Is that true? Will some of these SH-60B's actually go into a warehouse for a period of time?

Admiral MCDONALD. The Navy plans to fully stand-up the Fleet Replacement Squadrons (FRS) on each coast and to stand-up the Fleet Squadrons from which detachments are deployed in a planned and orderly manner. The fleet squadron must form each detachment of pilots, aircrewmen and maintenance personnel and train them together for nearly a year before that detachment is fully ready to deploy. To be able to work up detachments and perform its required training, a squadron must therefore have more aircraft assigned than are required to fulfill detachment requirements at any one time. The Navy will be operating the SH-60B in advance of the FYDP Lamps MK III ship schedule, and in fiscal year 1986 sufficent aircraft will be available to either put detachments of two aircraft on selected ships or to store attrition aircraft one that decision has been made. This procurement plan is a congressionally supported plan which purchases the SH-60B at the most cost effective production schedule to hold down total program expenditures.

Chairman STRATTON. The SH-60B is a derivative of the UH-60 Black Hawk which is being placed on a multi-year procurement program. What cost benefits are figured into the Navy budget estimate for the SH-60B based on the Army's multi-year procurement of the Black Hawk?

Admiral MCDONALD. The Navy considered the benefits which would accrue from the Army's multi-year procurement and included this factor in the development of its budget 1983 submittal. Combining the Army's multi-year and the Navy's fiscal year 1983 requirements for common components will result in more economic buys and lower costs.

A-6E

Chairman STRATTON. Even after allowing for conversion of 44 A-6E's to the KA-6D tanker configuration over the next six years, I note that the Navy actually has a surplus of A-6E's and will continue to have one out to fiscal year 1987. Since there is a large degree of commonality between the A-6E and the EA-6B, would there be any serious impact if the A-6E funds were redistributed to the F-14 and EA-6B programs where the inventory is less favorable?

Admiral MCDONALD. While a surplus of A-6E's currently exists, continued procurement is required to achieve inventory levels to sustain the current A-6E force and stand up the 14th air wing in fiscal year 1987. The current FYDP procurement profile takes into account this surplus of A-6E's, A-6E to KA-6D conversions, and the addition of the 14th squadron. While it might be feasible to reduce the A-6E procurement in fiscal 1983/1984, any reduction would have to be added back in fiscal year 1985 to achieve the same fiscal year 1987 inventory level required to support the 14th carrier air wing force structure. While the A-6E airframe has a relatively high degree of commonality with the EA-6B, the avionics/weapons suite is not common. A redistribution of A-6E funds could create a gap in A-6E production which would require start-up costs in addition to adversely impacting production costs, learning curves and avionics vendors. A redistribution of A-6E funds would also impact planned multi-year procurement of the A-6E aircraft. Therefore, redistribution of A-6E funds is not recommended.

EA-6B

Chairman STRATTON. The cost of the EA-6B rose 25 percent from 1982 to 1983 even though the production rate was stable at 6 per year. This aircraft now costs more than $50 million a copy, compared to $33 million just 2 years ago. How do you explain this cost increase in view of the fact that this was one of the programs Secretary Weinberger cited as an example of cost savings because of multi-year procurement?

Admiral MCDONALD. The increase of 24 percent in the fiscal year 1983 EA-6B production program over the fiscal year 1982 level is attributable to the following:

Flyaway Cost increased by $18.9 million, or 10 percent; $13.8 million was due to escalation; $5.1 million was due to configuration changes including ICAP II, ASN-123, ASN-130, ALR-67 and ARC-182.

Support increased by $42.8 million from $57.3 million to $100.1 million, or 74 percent. Escalation caused a $6.8 million increase. PGSE and PUBS increased by $36.0

million to accommodate requirements for ICAP II ($15.5 million), Mission Planner ($6.8 million), Common ECM ($2.5 million), CV outfitting ($5.9 million), ILS ($1.2 million), VAQ 139 ($3.9 million) and other ($.2 million).

Advance Procurement increased by $8.1 million to fund Economic Order Quarterly requirements associated with Multiyear Procurement. This will result in savings in future year procurements but requires upfront funding to achieve these savings.

AV-8B

Chairman STRATTON. In November, the Navy planned 24 AV-8B's and 66 F/A-18's. Now, the Navy Budget reflects 84 F/A-18's and 18 AV-8B's. This suggests that the Navy will sacrifice economies of scale in the AV-8B program to achieve them in the F/A-18 program. Why did the AV-8B program get reduced from the November draft budget even though the Navy requested an increase in Budget Authority?

Admiral MCDONALD. The fiscal year 1983 column of the fiscal year 1982 Budget as amended in March included 84 F/A-18s and 24 AV-8Bs. The Navy's Budget as submitted to OSD in October included 66 F/A-18s and 18 AV-8Bs. The Deputy Secretary of Defense's decision to return the F/A-18 procurement to 84 was based on a desire to maintain more efficient F/A-18 rates, as well as the need to fill both Navy and Marine requirements within available sources. The AV-8B quantity of 18 was not increased in a similar manner because of affordability.

SH-2F

Chairman STRATTON. Last year, the Navy proposed a three year program for procurement of 48 Lamps I helicopters. That program has now grown to 90 despite the acquisition of the more capable Lamps III system. How can the Navy justify the LAMPS III on the grounds that the Lamps I lacks sufficient area coverage and then virtually double the Lamps I program?

Admiral MCDONALD. The Lamps III force is justified on its own merits. A 1981 study directed by the Secretary of Defense on this subject concluded that Lamps III is the most cost effective ASW system available for its mission (compared to Lamps I, the P-3C, and the SSN-688). The procurement objective of 90 SH-2F aircraft was based on the envisioned availability of Lamps MK I capable ships. These ships include BB-61, CG-26, CGN-35/38, FF-1040, FF-1052, FFG-1, FFG-7 and the Coast Guard WHEC-378 classes.

Chairman STRATTON. What is the Navy going to do with these Lamps I helicopters which will be entering the force structure in 1985? What is the disposition of the new requirement for 42 helicopters?

Admiral MCDONALD. The Lamps I aircraft in the 1990's will be employed by both active and reserve naval forces, deploying in a potential wartime situation of FF-1040/1052, FFG-1/7, BB, CG-26/35/38, and Coast Guard WHEC class ships. None of these ships is capable of Lamps III operations, and most are planned for service use into the next century. We currently cannot fill our Lamps I requirements on these ships. The new procurement Lamps I aircraft will supplement current SH-2F's in filling these shortfalls. We are continuing to analyze the precise numbers of LAMPS aircraft required, and will adjust the SH-2F procurement as appropriate if the envisioned ship market changes.

F-14

Chairman STRATTON. Last year the unit flyaway cost of 30 F-14's was $30 million. This year it is $38 million for 24 aircraft. $2 million of the increase is attributed to escalation at 7 percent. This seems about right. $2 million is attributed to the quantity decrease—a much more difficult figure to reconcile since we didn't appear to derive similar benefits on the positive side in the F/A-18 program where the production rate is up by 42 percent. Would you explain how this cost penalty was derived?

Admiral MCDONALD. $2.9 million of the $8.0 million increase in unit flyaway costs from fiscal year 1982 to fiscal year 1983 for the F-14 is attributable to the reduced quantity of 24 aircraft in fiscal year 1983 vice 30 aircraft in fiscal year 1982. While the quantity of aircraft decreases, overhead costs of prime contractors will not decrease to the same degree that direct labor and material costs will be reduced in manufacturing 24 vice 30 aircraft. The projection of changes in overhead rates for 24 vice 30 aircraft is based on past experience in the procurement of various quantities of aircraft in previous years. Most recently, the relation of overhead to direct costs was established in the fiscal year 1981 and fiscal year 1982 procurements in which proposals from contractors were received for 24 aircraft in accordance with

original budget request. Congressional actions subsequently changed both years to quantities of 30 aircraft. The relationship of overhead to direct costs for both 24 and 30 aircraft in those years is the basis for the projection of $2.9 million attributed to quantity decrease in fiscal year 1983.

MANAGEMENT RESERVE

Chairman STRATTON. The present system of budgeting encourages concealment on the part of project managers. Prudence demands that they provide some management reserve in their budget, but discretion demands that it not be identified as such in the budget process. Instead of concealing management reserve funds in individual program lines where it might or might not be needed, would the Navy (Army) (Air Force) support the concept of centralizing procurement management reserves at some higher level (systems command) or (Darcom) where it could be managed and applied more effectively?

Admiral MCDONALD. The Navy favors giving visibility to management reserve as a necessary funding requirement. In fact, the fiscal year 1983 budget includes, by line item, management reserve funds in those programs where the risk warrants them. Placing those funds in individual programs has the advantage of tying them to a specific requirement based on careful risk assessment. A large centralized pool would tend to obscure requirements rather than illuminate them as does the Navy's present system.

P-3C

Chairman STRATTON. The Navy has reduced the P-3C program from 12 to 6 this year, despite an apparent shortfall of P-3C's. However, the Navy has 19 other squadrons equipped with the P-3A or P-3B, including 18 reserve squadrons. Would you explain how the requirement is derived and how the P-3C requirement is affected by the acquisition of Lamps III extending fleet ASW capability and augmenting the S3A capability.

Admiral MCDONALD. The programmed P-3 force level is 37 squadrons, 24 active plus 13 reserve. As of the fiscal year 1982 P-3 buy, we will have introduced the P-3C to 19 of the 24 active squadrons. Since the beginning of the P-3C program, the Navy has had the goal of an all P-3C active fleet. Extensive analysis of actual exercises shows the P-3C to be a clearly superior fighting machine to the P-3A/B, [deleted]. A digital data processing and sensor integration system sets the P-3C above the P-3A and B aircraft in capability and allows the P-3C mission commander [deleted] as much time for tactical decisions during intense ASW operations. Therefore, the Navy continues to maintain the goal of providing all of our front line P-3 forces with the P-3C. In addition, the P-3C Update programs have upgraded sensor systems on a planned programmed improvement basis to keep the aircraft effective against newer Soviet threats.

The P-3C force level requirement is not affected by the Lamps MK III acquisition since the P-3 primary mission is ocean search and ASW, using barriers and area search tactics distant from the battle groups and their Lamps ships. Most of the P-3 mission requirements are beyond the capability of the Lamps MK III and the S3A and only overlap when insufficient local assets are available to provide direct support to convoys, replenishment groups and surface action groups. In these cases, the long range, land based P-3 is vital to the ASW defense of these units.

The reduced procurement of P-3C aircraft proposed for fiscal year 1983 was driven purely by fiscal constraints created by the requirements of other higher priority programs.

KC-130

Chairman STRATTON. Last year the apporpriations committee funded 4 KC-130's for which there was no authorization. Would you briefly summarize for the subcommittee what the requirement is for this aircraft and what the Navy intends to do about obligating these 1982 funds without authorization?

Admiral MCDONALD. These aircraft are Marine Corps Aerial Refuelers. The Marines have one squadron of aerial refuelers in each of their four wings. A total of 64 aircraft are required to adequately equip their four squadrons to currently authorized force levels but we only own 54 KC-130's now. Of these 54, 40 are the 20 year old KC-130F models and 14 are the newer "R" versions, similar to the Air Force's latest "H" series C-130's. The 4 additional KC-130R aircraft will help to offset the current shortfall of assets. The Office of Secretary of Defense is presently in the

process of resolving the question of obligating these funds with the appropriate committees of the Congress.

F-14

Chairman STRATTON. Consideration has been given to the possible use of the 101 engine on the F-14 because of stalling problems experienced with the TF30 engine. What is the Navy's current plan?

Admiral MCDONALD. We have had serious problems with the TF-30 including stalls, reliability, and maintainability. We are closely monitoring the F101 DFE development program. We are just finishing a limited demonstration of the DFE in the F-14 and the results were favorable. It is a question of affordability. We are not considering retrofitting existing F-14's with the DFE but if there are unresolvable problems in the TF30 engine, we feel we have a fall back position with this engine as an alternative.

AV-8B

QUESTION. General White, the Marine Corps receives a large part of the F-18 buy as well as all of the AV-8B. Is it the Marine Corps position that you would rather have the larger number of F-18's instead of reducing the F-18 buy in order to procure more AV-8B's?

Lt. Gen. WHITE. As I responded to an earlier question, our aviation force modernization depends on procurement of both the F/A-18 and AV-8B. Our primary goal is to achieve economical production rates for both aircraft. It is, therefore, not the Marine Corps' position to secure increased or decreased procurement schedules for one program to the point of establishing uneconomical production rates for the other. However, since the F/A-18 is further along the production learning curves and has a more economical production rate established, it appears, to me, to be more logical to make slight adjustments to the F/A-18 numbers if that is necessary to assist in achieving the desired production rate for AV-8B. The Marine Corps is prepared to consider such trade-offs.

QUESTION. General White, which is the Marine Corps' highest priority aircraft, the F/A-18 or the AV-8B? if the AV-8B is your highest priority, why are you requesting 43 F/A-18 and only 18 AV-8B's?

Lt. Gen. WHITE. The modernization of Marine Corps Aviation is dependent on both the AV-8B and F/A-18 aircraft. It is a fact that maintenance of our light attack and fighter attack balance is essential to Marine Corps mission accomplishment. In that regard, the capabilities of these two aircraft are ideally suited to the flexibility needed for this balance. In response to the question of highest priority, I must state that both aircraft are essential to our mission. In my view, either program will suffer comparatively from failure to reach, or reasonably approach, its planned economical production rate. At this time production learning curves are nearly established for F/A-18, but are just getting started for F/A-18; the production rates of the two aircraft are quite dissimilar. The learning curve of the AV-8B is quite steep until about the 70th airplane and there are clear-cut economic benefits to be gained with small increases in numbers. Also, our light attack community, for which the AV-8B is being procured, is today well below its established inventory requirement, while our VMFA (F-4/F-18) community is in a better condition numerically for the FYDP years. Therefore, if a priority exists, it is for achieving an economical production rate for AV-8B in the near term.

As to the numbers of F/A-18s and AV-8Bs requested in the 1983 budget, I understand that adjustments must be made to remain within imposed fiscal constraints. And, as you are well aware, the Marine Corps does not establish priority for Department of Navy programs. At the same time, the original requirement for 24 AV-8Bs in fiscal year 1983 has not been altered.

Mr. STRATTON. We will stand adjourned until 10 o'clock tomorrow.

[Whereupon, at 4:25 p.m., the subcommittee adjourned, to reconvene at 10 a.m., Thursday, March 11, 1982.]

AIR FORCE TACTICAL AIR PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Thursday, March 11, 1982.

The subcommittee met at 10:50 a.m., pursuant to notice, in executive session, in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

This morning we continue our hearings on tactical aircraft and missile programs with the Air Force presentation on its fiscal year 1983 budget request.

In the aircraft area, the subcommittee will want to continue its review of initiatives to improve the capabilities of the Guard and the Reserve.

In terms of specific issues, I think we will want to take a hard look at the Air Force proposal to terminate the A-10 line despite a continuing shortfall in Air National Guard requirements. By my calculations, the Air Force's A-10 force structure will begin to erode after 1990 if additional attrition aircraft are not procured.

We also have an emerging issue between the F-15 and the F-16 that the subcommittee must begin addressing. A year ago, the Department of Defense position was that the F-15 line would terminate with the fiscal year 1983 buy, completing a program of 729 aircraft. Now the Air Force wants to buy 666 more F-15's for missions such as North American air defense, additional superiority fighters and deep-interdiction aircraft. The additional cost of this expanded program will be nearly $20 billion.

What concerns me is that the Air Force sold the subcommittee on the advantages of the F-16 multistage improvement program which would give the F-16C a more effective radar and make it AMRAAM capable. I have difficulty understanding why the F-16 would not be equally suitable for many of the missions for which these additional F-15's would be procured.

We will also want to have a rather thorough explanation of the North American air defense requirement, since the Air Force feels this mission is so essential that we should commit up to 150 F-15's and 12 AWACS to perform it.

Of course, we are well aware of the fact that we deliberately avoided having an air defense some years ago. Presumably, circumstances have changed, but I think we need something on the record as to what extent they have changed and to what extent we are

capable of mounting an adequate air defense while we are naked to defense against other means of attack.

I think we also will want to know the extent to which the beefing up of this new air defense requirement will be a mission that can be given to the Guard and the Reserve in the Air Force, since the Air Force has done the best job over a long period of time in integrating the Guard and the Reserve Forces with the Regular Air Force forces.

As an interesting side issue, we would like to understand why the Air Force believes the [deleted] can handle incoming Backfire bombers, but the Navy insists that F-18's with [deleted] for the naval Backfire.

The Navy believes that [deleted] can do the job.

When we get to tactical missiles, we want to focus particularly on two areas—the troubled IIR Maverick and the airbase defense where the Air Force has the Rapier missile for bases in the United Kingdom but nothing comparable to defend forward bases on the continent.

We will want the Air Force to comment, frankly and completely on their assessment of the Rapier for the airbase defense mission. Obviously, the United Kingdom is interested in it and interested in selling it to us, but I think we need a technical estimate on the part of those who are charged with the airbase defense mission in the U.S. Air Force.

Now I yield to our gracious and capable and distinguished minority leader of the subcommittee, Mrs. Holt.

Mrs. HOLT. Thank you, Mr. Chairman.

I think you focused the issue very well on the A-10 program. I have a great deal of difficulty understanding why the Air Force wants to shut down this line when we still have unfilled Guard requirements and when we have no follow-on close air support aircraft to maintain the force structure through the 1990's.

On the F-15/F-16 issue, this is indicative of our frustration with the overall pattern of military procurement practices. One year the services come in and justify a low cost/high-low mix concept on the grounds that they cannot afford to fund the higher cost systems. The carrot to the committee is that funding the low end of the mix will save money by limiting the high end procurement. Then when the Congress accepts that rationale, after a few years the service abandons it and wants to continue with a host of new requirements for the system that we were told would be terminated.

My problem with this is that we never get a payoff on these contracts we sign with the services. Last year's arguments and justifications are discarded as soon as they are no longer convenient.

On the subject of the imaging infrared Maverick, I am very concerned. I know the R. & D. subcommittee gave serious consideration to terminating this program 5 years ago. If we believe the stories in the paper, the committee and the Air Force could look foolish if we go ahead with this program.

So, I hope the witnesses will give us a candid assessment of the IIR Maverick and not just a party line. We need candor if we are going to make an informed judgment on our own, rather than relying on service experts and staff recommendations.

Mr. STRATTON. With those encouraging and supporting statements, General Burke, you may proceed.

STATEMENT OF LT. GEN. KELLY H. BURKE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE AIR FORCE

General BURKE. Thank you very much, Mr. Chairman and Mrs. Holt.

I think both opening statements introduce a number of important and timely questions. We have structured a briefing, I think, that will touch on all of those. We have as our principal spokesman today Gen. Bob Russ, who is our Director of Operational Requirements and one of the Air Force's most experienced and knowledgeable fighter pilots and experts on tactical air warfare.

General Russ's briefing does have classified elements. I think we cna go through it in the order it is prepared a little better if we are able to go into executive session.

Mr. STRATTON. In that case, the Chair will exercise the authority provided yesterday and at this point we will go into closed session, to receive classified information. Those not authorized to receive that information, we would politely request that they leave the room.

Mrs. BRYON [presiding]. Do you want to proceed, General Burke?

General BURKE. Thank you, Mrs. Byron. General Russ is ready to proceed. [Slide presentation.]

STATEMENT OF MAJ. GEN. ROBERT D. RUSS, USAF, DIRECTOR OF OPERATIONAL REQUIREMENTS, OFFICE OF DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

General RUSS. As you know, we have covered these various major areas so far. We are down to our last area, which is the tactical air section. We will use this as a kind of a guide today to go through that.

What I would like to do today is to start off with a short little section on our strategic air defense fighters, and then go into our fighter attack forces and other attack forces, and then discuss each of the other programs and discuss each of the airplanes and each of the missiles.

STRATEGIC AIR DEFENSE FORCES

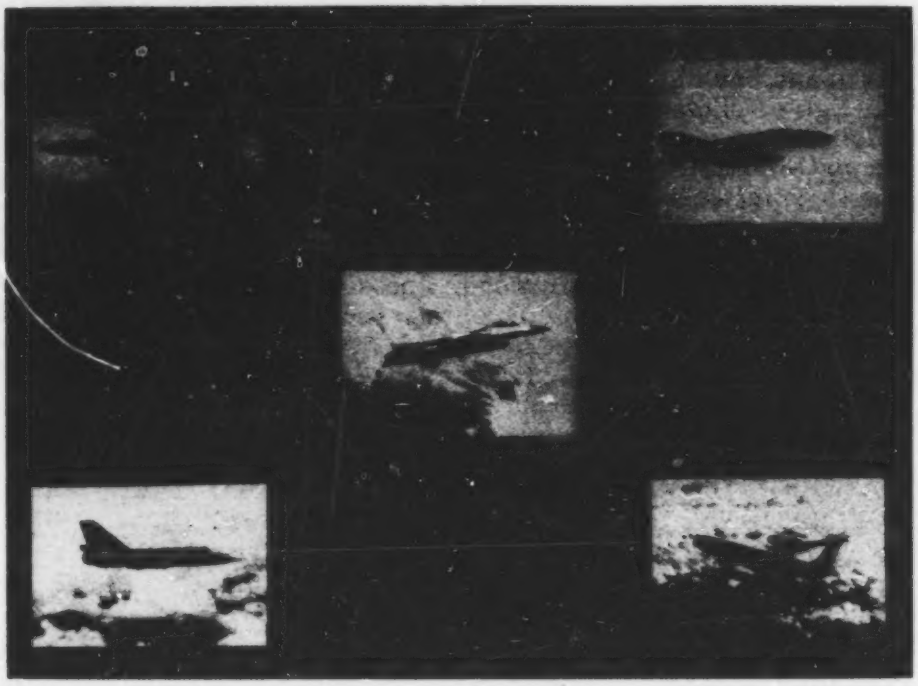
Force objectives: Improve warning and surveillance, modernize air defense fighters.

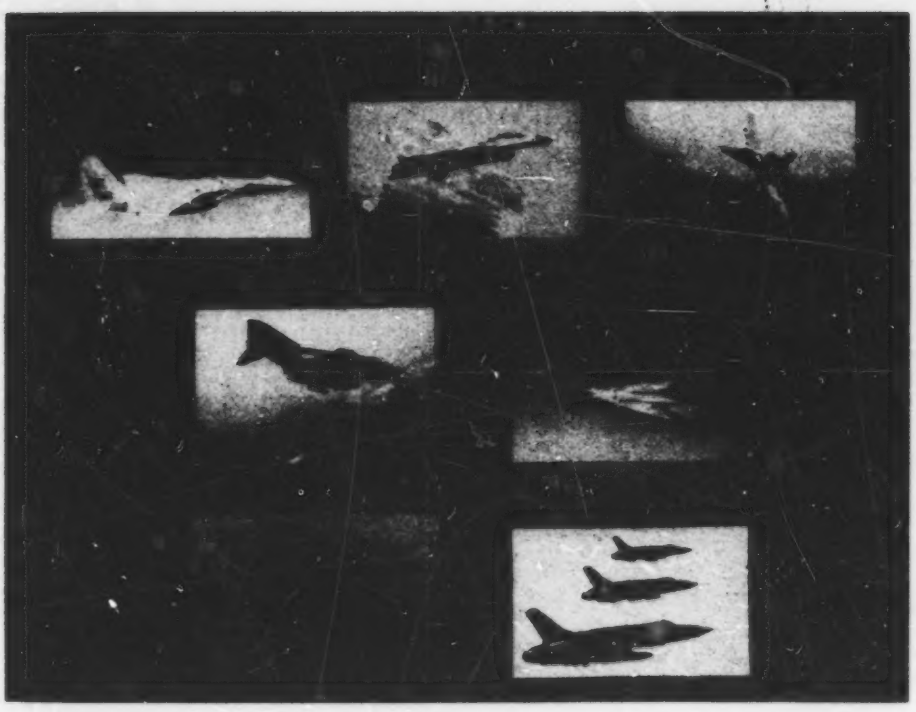
Modernization plan: Procure additional E-3A aircraft, replace 4 F-106 squadrons (Active) with F-15's, replace 2F-106 squadrons (Reserve) with F-16's.

At the end of 1982 we will have three primary airplanes in our air defense forces—the F-4, the F-15, and the F-106. We will have a total of a little over [deleted] aircraft, and they are divided between the Active and the Reserve Forces.

We have 15 squadrons, 10 of them in the Reserve Forces or two-thirds of it, and 5 in the Active. The F-15 will be introduced—in fact, they are being introduced at this time—at Langley Air Force Base, Va. This squadron will be our antisatellite capability squadron, our first one.

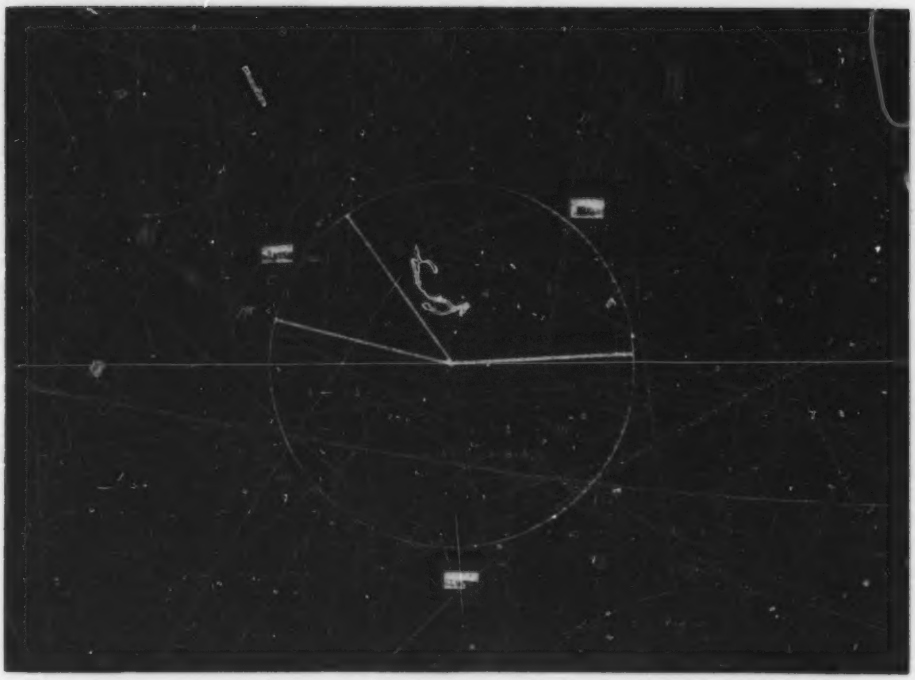
When we put our budget together we looked at some objectives. Our first objective was to improve our warning and surveillance. To do that, we included in the budget additional E–3A aircraft. We also wanted to modernize our air defense forces and over the 5-year period replace our aged F–106's by introducing F–15's into the Active Forces and F–16's into the Reserve. Now, that force will look like this at the end of 1987. We will have introduced the F–16 into the Reserve forces. We will still have three F–106 squadrons in the Reserves. This is at the end of 1987.





By 1988, those F-106's in the Reserves will also be out of the inventory. We will have fully modernized with five squadrons of F-16's.

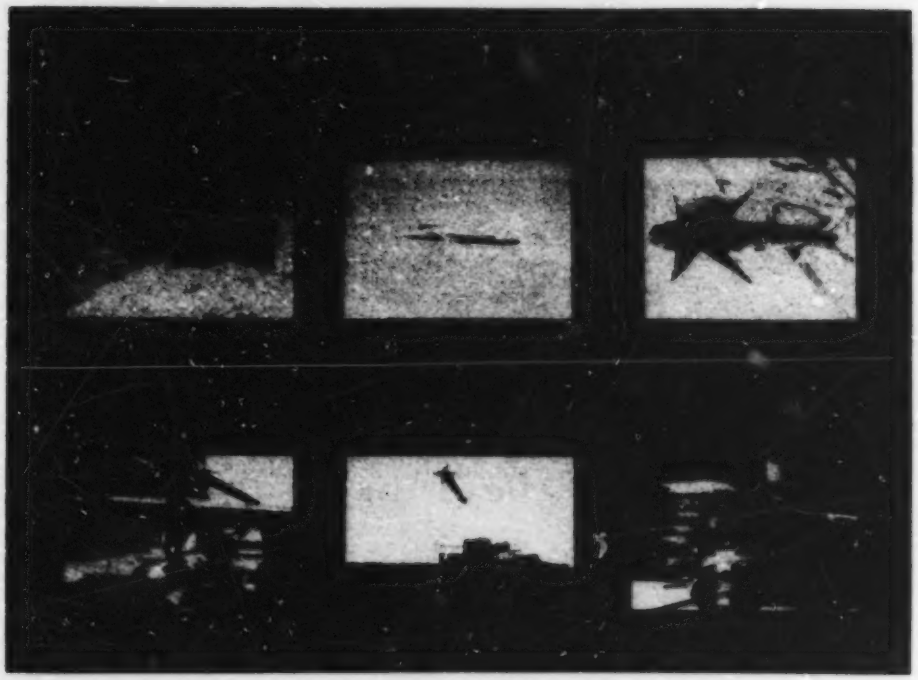
Looking at the tactical forces, we have seven different types of airplanes currently in the inventory at the end of 1982. Again, the hatched area shows that contribution of the Reserve Forces. When you look at the mission capability of these airplanes they are divided as such: About 55 percent of the aircraft are specialized aircraft; by that I mean they are either dedicated to air-to-air missions or dedicated to air-to-surface missions; about 34 percent are F-4's and what we call dual-role, and 11 percent are what we call swing. The difference between a swing aircraft and a dual-role aircraft, by definition a dual-role aircraft is two seated and therefore it could do most of the various missions that are assigned to tactical fighters.



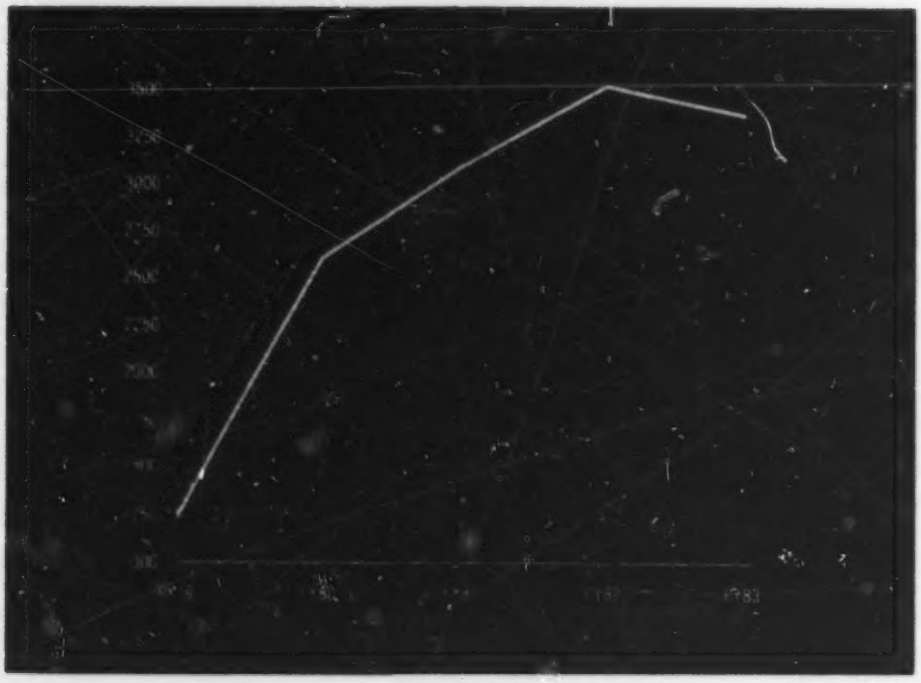
On the other hand, the F–16 is single seated and it can only do some of the missions. You can train one pilot to do all of these various missions in a two-seater; but not in a single-seater.

FORCE OBJECTIVES

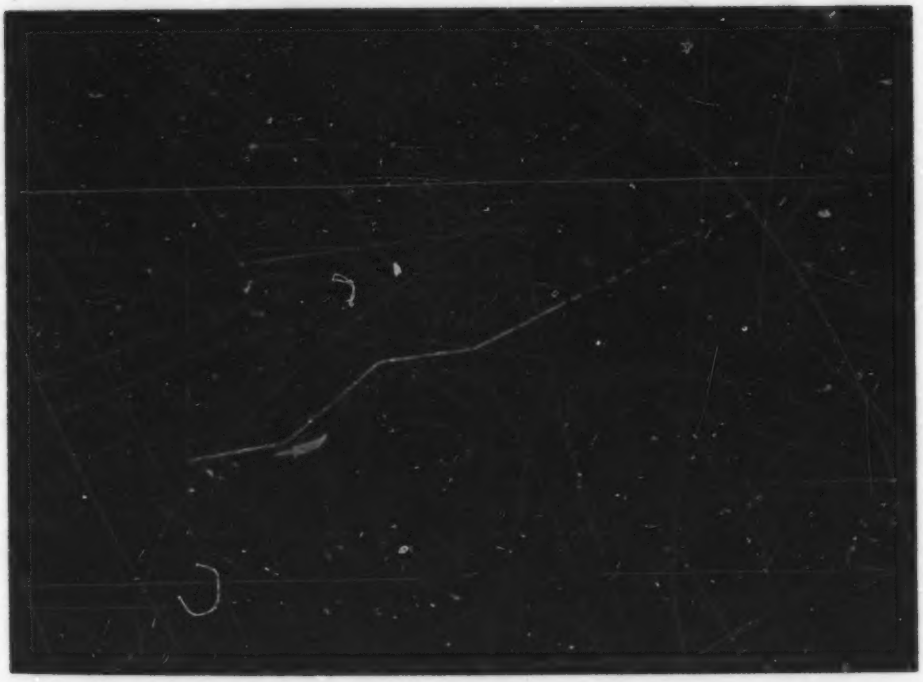
These are the four objectives that we set down when we developed our tactical forces. First and most important, we wanted to increase the readiness and sustainability of our current forces, then we wanted to improve those forces; next we wanted to build our force structure to the authorized level; and, finally, we wanted to make sure we are preparing for our future needs.



Starting with the readiness and sustainability, I would like to discuss these areas and I will do that and show you what we are doing on each one of them.

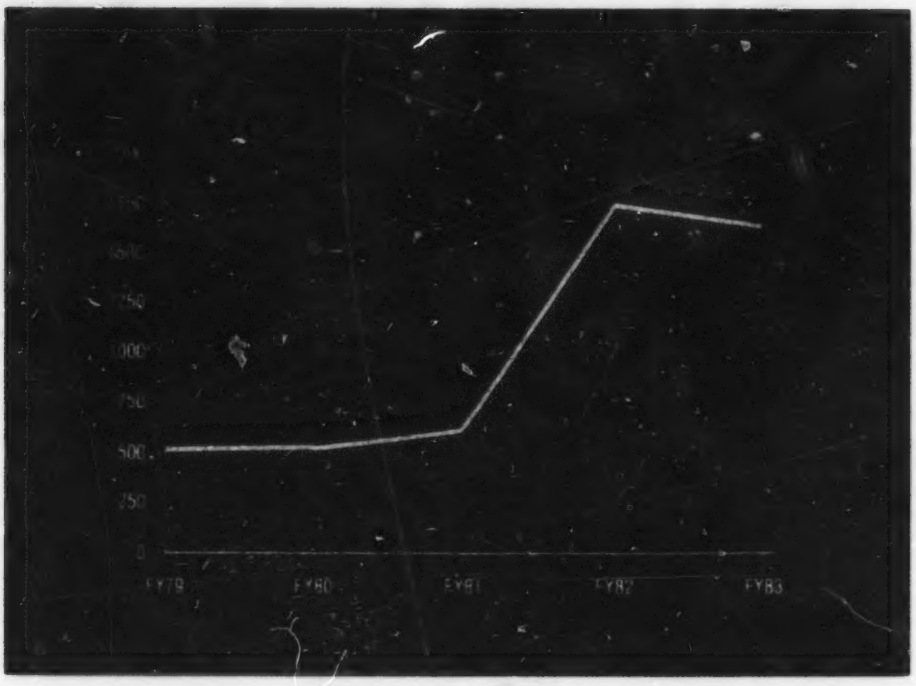


This shows a funding line of what we put into flying hours since 1979. You see a dramatic increase in flying-hour funding. I might mention that the reason this decreases up here in 1983 is because the cost of fuel has gone down and therefore the cost per flying hour has done the same thing.



When you look at that funding to see how we are doing in getting flying hours for our pilots, you will see back in 1979 we were getting 14.5 hours per pilot. Our goal for our average pilot to meet all his requirements is 20 hours. Now, that goal varies on which type of airplane you are actually flying, but as a general rule we use 20 hours.

By the end of 1983 we will be just less than 18 hours, and if we continue with our budget through the 5 years we should reach our 20 hours by 1985.



In the munitions funding, again we have plateaued at this level, about $500 million over the last 4 years. We have put large sums of money in 1981 and 1982 to overcome the backlog that we had—or, I should say, the bow wave that we had created—and we are coming down at this level and stabilizing now at a level that will sustain our operations.

When you combine the individual air-to-air weapons, this is a consolidated line that uses all of our air-to-air missiles. Back in 1981 we had less than [deleted] percent of the requirement that was funded. Through the help of this committee, we were able to increase that line and by 1987 we will have [deleted] percent of our munitions funded.

Some of these munitions will not get into the inventory until a few years later, but by [deleted] will be funded for our [deleted].

On the antiarmor munitions, while we do have [deleted] percent of the munitions required for [deleted] days, a great majority of those munitions are [deleted] munitions. By that I mean they are munitions of the [deleted]. We need to have a preferred munitions mix and we have set out on a course that builds a preferred munitions mix up to [deleted] percent by the 1987 timeframe.

These preferred munitions are the laser-guided bombs, smart bombs, and things that make your tactical air more effective.

In the spare parts funding, we have a similar story, grossly underfunded back in the 1970's and initial 1980's. We put significant dollars in it to improve that, to build up our kits, and now we are stabilizing out in 1983.

Here is what that looks like. As you know, we have three categories of spare parts: We have the peacetime operating supplies which we use in day-to-day flying. We have our war readiness support kits which last us for the first 30 days when we go to war; and then we have our other war readiness, which lasts us 60 days.

As of 1983 we have [deleted] these parts and by 1985 we will have [deleted].

I would like to move now to the second objective, which is to improve the capability of our current forces. While we have many modifications going on, I have picked two which I think are the most important, one that is in the air-to-air arena and one that is in air-to-surface area.

First in AMRAAM. This is our newest missile which will give our F–16 force an [deleted] capability.

Currently the F–16 is [deleted] in the air-to-air area.

The second one is the Lantirn pod, which is designed to give our fighters a night capability. This will allow our fighters to operate [deleted].

Mr. BADHAM. Will you go back to the last slide, please, General?

General RUSS. Certainly.

Mr. BADHAM. You said Lantirn pod. We don't have a Lantirn pod, do we? It is Lantirn pods?

General RUSS. Yes, sir.

Mr. BADHAM. That is not according to your original specification; that takes up two hard points on the wings, two external stores positions?

General RUSS. No, sir, it doesn't. The Lantirn pods will be mounted on chin stations which are specifically designed for the pods underneath the intake.

Mr. BADHAM. How much overweight from the original specification are you now?

General RUSS. The two Lantirn pods, I think, will weigh about 900 pounds.

Mr. BADHAM. How much over are you on cost estimates? I think it started out as a $93 million program.

General RUSS. Yes, sir.

Mr. BADHAM. Where are you now, $500 million?

General RUSS. I think the figure is $490 million. I have some charts on Lantirn that I expect to get into specifically later. If you want to go to that, I can.

Mr. BADHAM. No. I will wait until later.

Just one further thing. When you are talking about the missions and dual role of the F–4 versus the swing role of the F–16, are we pushing the ceiling now on pilot load when you try to mate a single-seat F–16 with AMRAAM and with Lantirn and everything? Are we getting to make the pilot a little too busy?

General RUSS. You certainly can saturate a pilot with too much. If you give him all the roles, he would be saturated. Assuming the airplane could handle all the roles, you could saturate the pilot. We will have units which are primarily air-to-ground units, and we will have units which are primarily air-to-air units. Therefore, they will train the majority of their time in one of the disciplines and a lesser time in the other discipline. That is not to say that you would not like them to be, shall we say, fully qualified in both, but there is not enough training time available to do that, so we feel that is the best mix.

Mr. BADHAM. Thank you.

Mr. KRAMER. Might I ask a followup question? I was going to wait, but Mr. Badham raised a question and I thought maybe I would ask it at this point.

I had the good fortune to be able to scare the tar out of me by flying in an F–15 almost a year ago. The question that has been raised here is the one-seater versus the two-seater situation. I guess I cannot understand why we are building planes today. Especially having been in this airplane now with just one seat, it seems to me with the complexities of the kinds of electronics and avionics and weapon systems that we are having, and the size of these planes and their thrust, I just don't understand, I guess, why one extra 175-pound weight or 200-pound weight would make that plane more inefficient. When we are considering a variety of dual roles and especially when we are concerned about pilot flying time and the lack of actual air experience, why are we not simply going to two-seat models in total?

General RUSS. Let me say that the Air Force has done numerous studies over the years on whether you should have a two-seat fighter or one-seat fighter. There are pros and cons on both sides. It is cheaper to do a one-seat fighter than a two-seat fighter but you have to add all the integration and you have to train all the pilots. You not only add a little bit of weight but you also give up fuel capacity, in a two-seater.

Now, if you have an airplane that is designed for a specialized mission such as the A–10, then one pilot can handle it; or an F–15 for a pure air to air mission, then one pilot can handle it. It is when you get into the multiple roles like deep-strike interdiction and add to that an air defense capability, and you add to that a nuclear delivery capability, and you add to that a precision guidance capability, that is when you tend to get one pilot almost saturated. That is when the two-seater becomes necessary.

Mr. KRAMER. I understand that our kill ratios in red flag-type exercises, using the very sophisticated plane versus one that is somewhat older and does not have sophistication, simply are not what they ought to be, considering the differences in sophistication of the two planes. I don't know what those ratios are, maybe 2 to 1 as opposed to 5 to 1 or 8 to 1 or something like that.

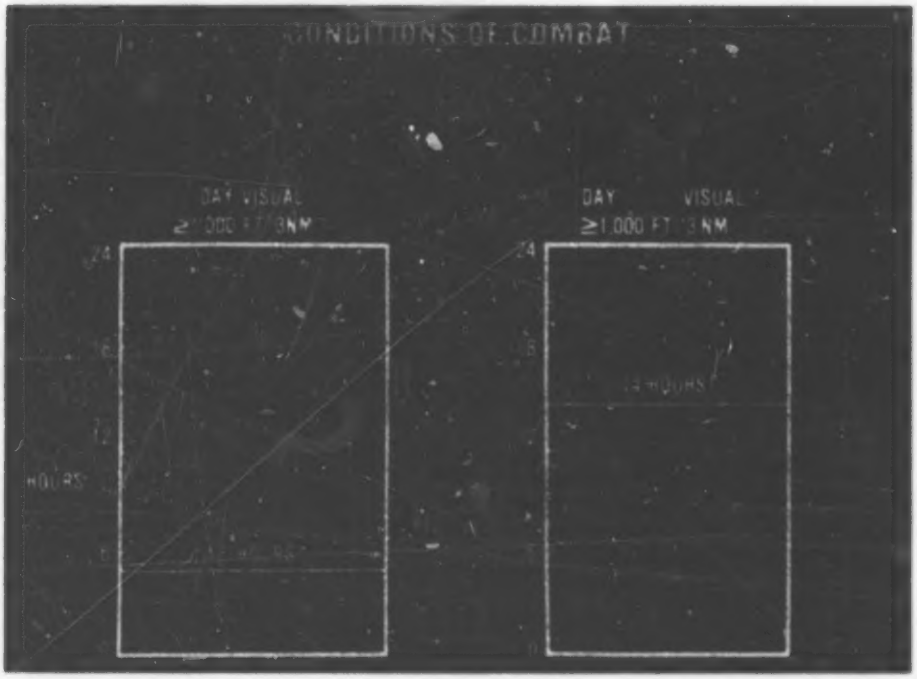
When you get a lot of enemy aircraft that are unsophisticated together with one or two sophisticated ones, from the projections that are being done, we are simply not doing as well as one might think, given the increased sophistication. I am not experienced, but having been in that airplane and experiencing the gravitational pulls and all the other things that needed to be done, it seems to me that just flying that thing is almost a chore in itself without having to worry about also being responsible for operating all the weapon systems.

I am just wondering if we would not get an awful lot more effective respose if we had people share those very complicated missions among themselves?

Mrs. BYRON. Mr. Kramer, we have a lot of territory to cover, so I think if we can go on with the presentation we can get back to these questions when we get on specifics.

Mr. KRAMER. Maybe if you could respond to that either later in the presentation, if I can still be here, or for the record if I am not here.

General RUSS. Mr. Kramer, I will be happy to. I mentioned that the Lantirn pods will allow us to have a night window. That is important and that is what I wanted to show you quickly on this slide.



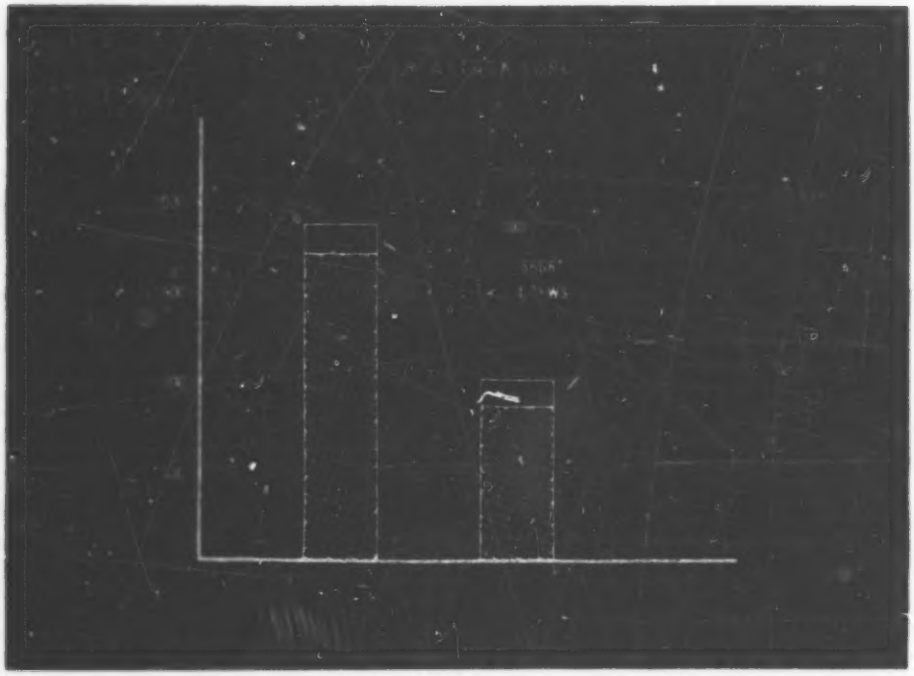
If you look at central Europe in January—and I picked January because that is the worst-case situation but I do that to highlight my point—we could fly about 4.5 hours a day during that month on the average. That allows us to fly about two sorties. If we give ourselves a night capability we can increase that window to 14 hours a day, and that same force can double the number of sorties that

they fly. So, we believe that the Lantirn pods are a very effective and worthwhile investment.

If you look at what we have today—this is our force in 1982 with a little over 2,200 airplanes [deleted] aircraft we have in the inventory that has an all-environment and all-weather capability [deleted]. By 1987 we will have added Lantirn pods to F-16's and A-10's, and you can see that it has significantly improved our capability.

Similarly capability increases are in on air to air when we add the AMRAAM. Today the F-15 is the [deleted] and we are buying F-16's [deleted]. We intend to introduce the AMRAAM and when we do that we will give that capability to the F-16.

We will still have a large block of F-16's that [deleted].



Looking at our authorized force level, currently we are authorized 40 tactical fighter wings, 26 Active wings, and 14 Reserve wings; however, we are short aircraft within those wings. In fact, we are short the equivalent of four tactical fighter wings worth of airplanes.

FIGHTER/ATTACK AIRCRAFT—PROCUREMENT

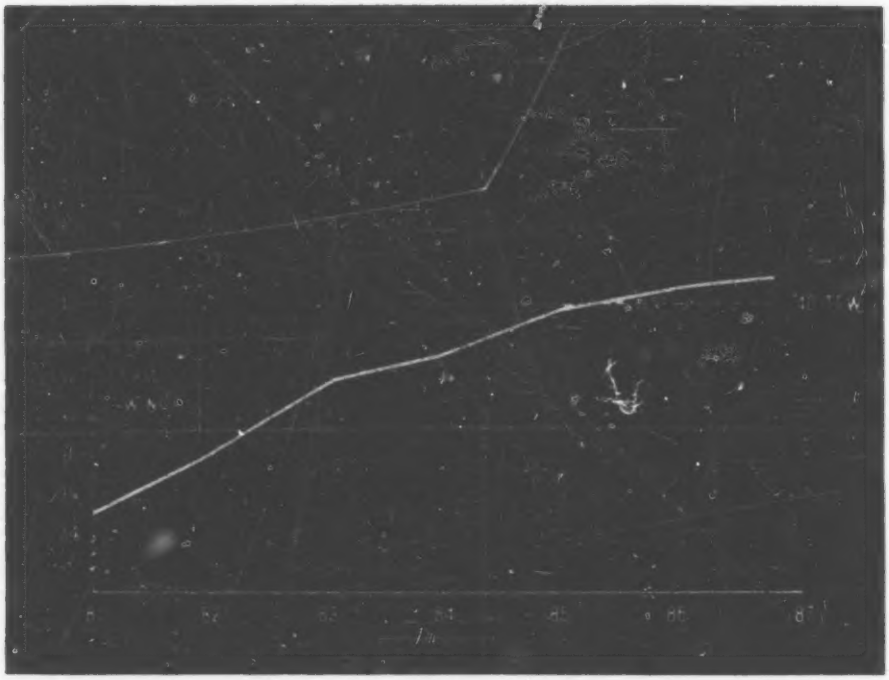
	Fiscal year					
	1982	1983	1984	1985	1986	1987
A-10	20	20	0	0	0	0
F-15	36	42	60	96	96	96
F-16	120	120	120	120	180	180
Total	176	182	180	216	276	276

FIGHTER/ATTACK AIRCRAFT—PROCUREMENT—Continued

	Fiscal year					
	1982	1983	1984	1985	1986	1987
Air defense	(33)	(27)	(20)	(33)	(54)	(20)

To make up those airplanes we have laid out a procurement plan as indicated on this slide. The totals across the bottom build to 276 out in 1986 and stabilize at 276. About 280 airplanes is what is required to sustain our force.

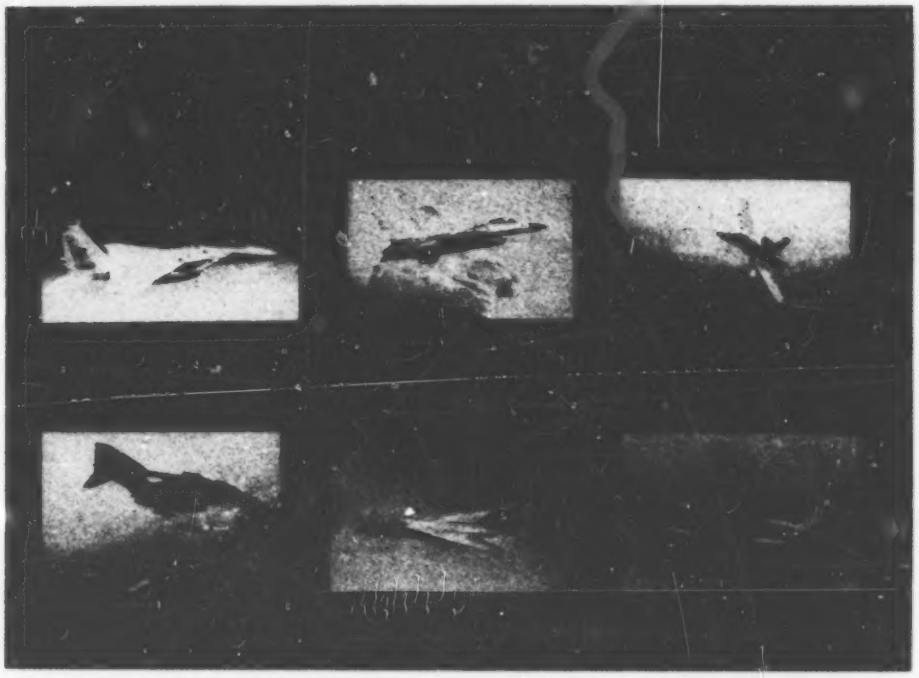
Now, out of these numbers we are going to replace air defense fighters. The numbers in parentheses then indicate the numbers by year.



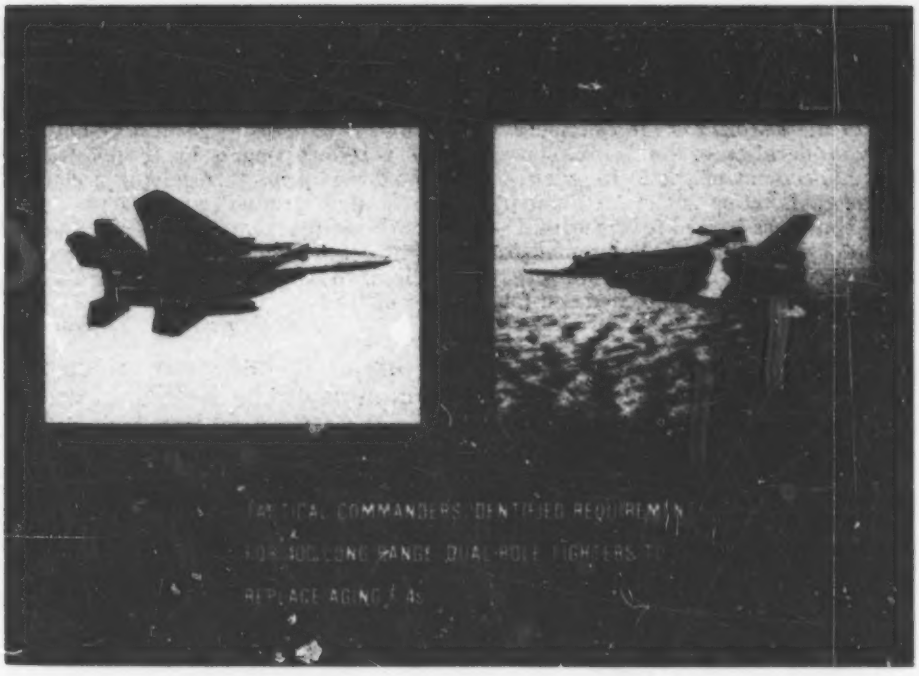
Let me show you what that does to our force structure. As I mentioned, we are four Tac Fighter Wings short in 1982. That procurement will allow us to reach our 40 TAC fighter wing goal about 1985. As the Secretary of Defense has said, ideally we would like to reach our 44 TAC fighter wings by 1990, but that does not come free. What it does do is increase the average age of our fighters.

Now, a fighter is good in the inventory for about 20 years. I say about 20 years because it depends on the type of fighter that you have, but basically 20 years is what we use for planning purposes; therefore, we would like a desired average age of somewhere between 9 and 10 years. At the end of 1983 our force average age will be 8.5 years and through that build period we will in the late 1980 timeframe have TAC fighter wings with a 10.4-year average age.

That will stabilize until 1990 when we have our 44 TAC fighter wings. I think it is interesting to note that if we look at what our adversary is doing, you will see that the Soviets started out in 1981 with about [deleted]. Then in 1987 our force will look like this.



The primary changes will be that the F-105's will no longer be in the force; and the F-16 will be in the Reserve and the Guard. The same proportionate share of our overall force, about 33 percent, will be Reserve Forces.



Now looking at our future, what we plan on doing in looking to the future is kind of in two phases: First, what are we going to do in the near future, and then longer? The tactical commanders have identified requirements for 400 long-range dual-role fighters to replace our aging F–4's. The long-range nature can be seen on this slide.

Now, what this slide shows is the offensive counter air, or better known as airfield attack, and it shows the percentage of airfields that are in the Central European theater that are of interest to us. It says that an F–111 based in the United Kingdom can attack about [deleted] percent of those airfields; it says that an F–4 can attack about [deleted] percent of those airfields.

What we are looking for in this long-range aircraft is to complement the F–111 and our "E" derivative we are talking about will give us this range which is approximately [deleted] range as we currently have in the F–4.

Now, in addition to that, I said that we need them to replace our aging F–4's. This is an average age chart for our F–4's. At the end of this year the average age of our F–4 force [deleted] so we need to replace some of these F–4's.

Now, Mr. Kramer's point is that we don't need to replace all of them with this sort of capability, with a sophisticated capability, and that is absolutely right; we are not going to replace all of these. We plan to replace [deleted] of those. The other ones we will replace with the current C's and D's that are coming off the line at this time. This is where that fits in. You can see the average F–4 force continually declines and as it declines about this time in 1987, this E derivative will be coming into the inventory.

FIGHTER/ATTACK FORCE

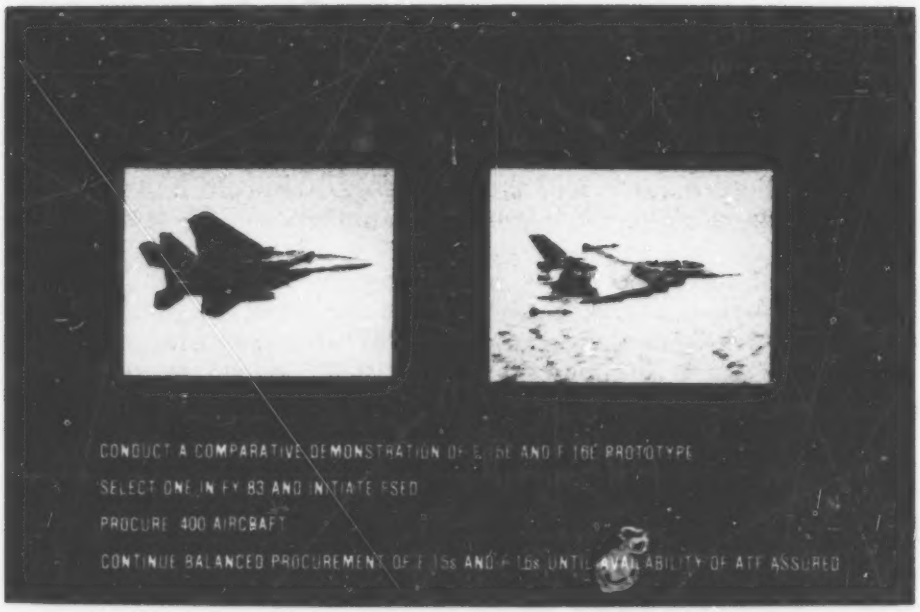
F15E/F-16E AIRCRAFT

The conferees deleted the Department's request for $27.3 million to begin development of the F-15E, the interdiction version of the F-15. This decision does not foreclose consideration of the F-15E. However, it does reflect congressional opposition to the enhancement of the F-15 in an air-to-ground role prior to receiving a comprehensive explanation of the Air Force plan to meet air-to-ground requirements.

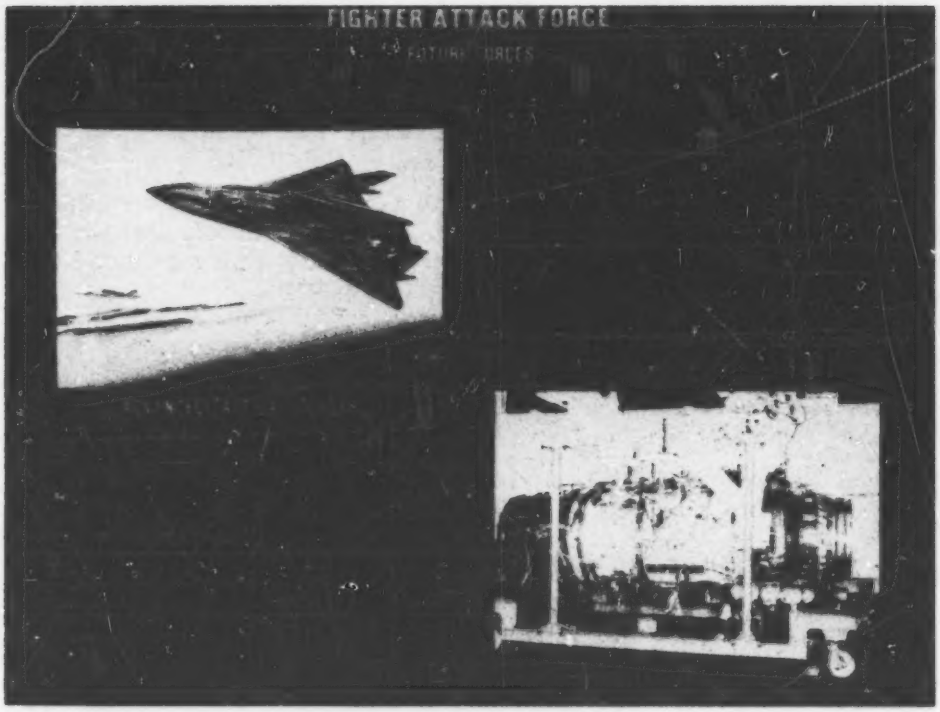
The conferees agreed to authorize the full MSIP requirement and approved an additional $15.3 million to be applied to the flight demonstration of the F-16E. It is the understanding of the conferees that $7 million would be required to fund the F-16E flight demonstration scheduled for summer of 1982.

—Authorization Conference.

This is what Congress had to say about it last year. Basically, they deleted the money for the development of the F-15E; however, they did not foreclose the option. They requested we come over and provide briefings to the various committees on what our plan was. However, they did agree to conduct a demonstration of the F-16E, the other part of the puzzle. So we are currently in the process of presenting that briefing. We have given it to many of the staff at this time and we will continue to do that.


CONDUCT A COMPARATIVE DEMONSTRATION OF F-15E AND F-16E PROTOTYPE
SELECT ONE IN FY 83 AND INITIATE FSED
PROCURE 400 AIRCRAFT
CONTINUE BALANCED PROCUREMENT OF F-15s AND F-16s UNTIL AVAILABILITY OF ATF ASSURED

We are going to conduct a comparative demonstration of the F-15E and the F-16E. We are going to select one of them, and only one of them, and initiate full-scale development in 1983. Then we will buy 400 of them, and then we will continue to buy the current model of 15's and 16's until we have our ATF.



Now, ATF is our next generation fighter, the advanced tactical fighter. Currently it takes between 10.5 to 12 years to develop a fighter. We developed the F-15 in 10.5 years. We developed the F-16 in about 12 years. If we start in 1983 with this budget to develop a new fighter, it will be 1993 at the earliest that we will be able to have a new fighter in our inventory. We think it is very important that we get on with that development at this time.

Mr. STRATTON. Is that [deleted] aircraft, General?

General RUSS. No, sir; that is an artist's conception.

Mr. STRATTON. When you say [deleted]. If you are going to build something new [deleted].

General RUSS. The three highest payoff items in our next generation fighter will be [deleted]. Those are the things that look like they have the most payoff now.

Of course, we have just done our studies. Congress 3 years ago allowed us to start some concept work and then we were not given any money in the last 2 years. So, we are trying to get this one off the ground at this time.

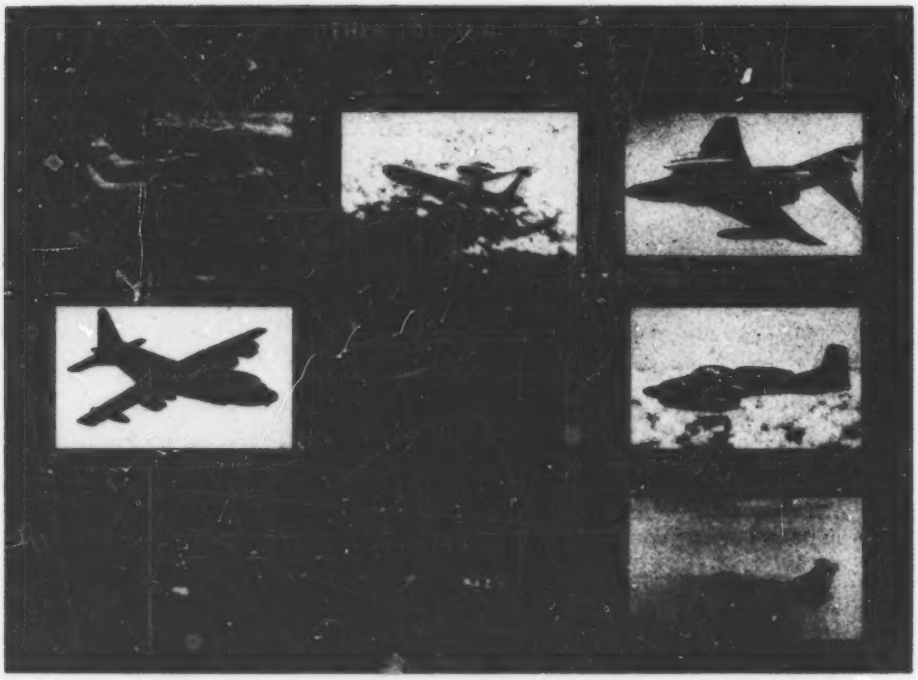
I might say that in this line is also a joint engine development. The Navy is going to need a new fighter in the 1990's and this will be a joint engine development between the Air Force and the Navy, so that we have one engine for both of the fighters.

SUMMARY PLAN

Let me summarize where we are going in our tactical fighters:

First and most importantly, the readiness and sustainability of our current force, then we are going to improve this current force by giving it a night and adverse-weather capability. We are going to fill out the 40 Tac Fighter Wings currently authorized; and we are going to start procurement of a derivative fighter, either an F–15E or an F–16E, to replace the aging F–4's.

In the longer term we are going to develop and produce an advanced tactical fighter, ATF, to meet the 1990's threat, and we will continue to buy F–15's and F–16's until we have that advanced tactical fighter in the inventory.



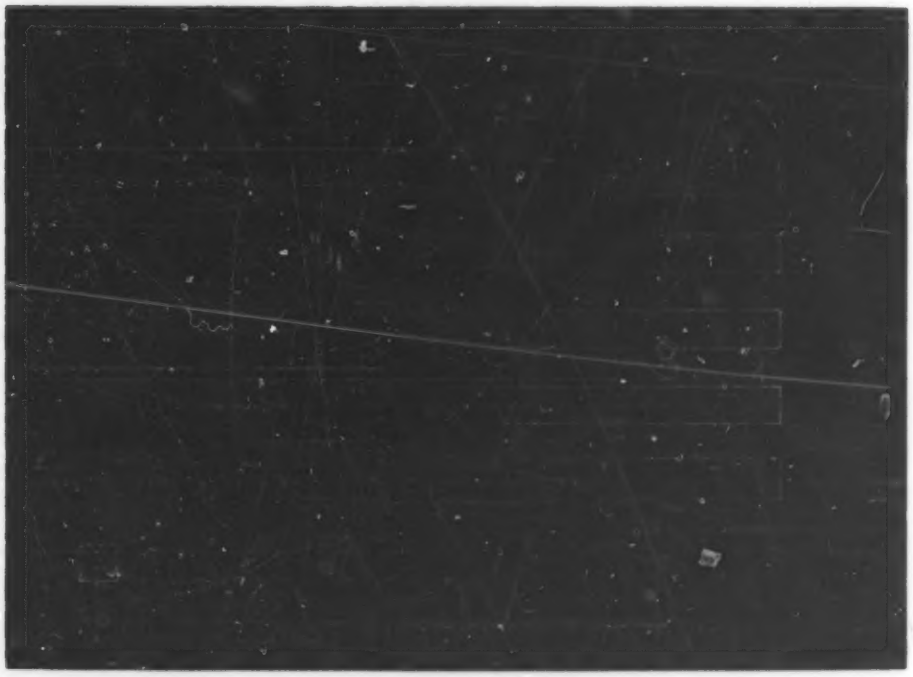
Let me say a few words about our other tactical forces. Sometimes they are given second shift to our fighters but they are very important. This shows the breakout of the other tactical forces. The vast majority up here of this circle is the RF–4C, which is a reconnaissance airplane. This section is the forward air control airplane, and then we have special-purpose C–130 aircraft, a few helicopters, jamming aircraft, and our E–3A.

OTHER TACTICAL FORCE—PROCUREMENT

	Fiscal years					
	1982	1983	1984	1985	1986	1987
E–3A	2	2	1	3	4	4
EF–111	12	9	0	0	0	0
EC–130	5	5	6	0	0	0
MC–130	0	0	2	4	6	0
UH/HH 60D	6	0	4	16	22	48

Our procurement for other aircraft you see here. We plan to continue E-3A procurement to the level of 46; 1983 sees the last of our EF-111 buy. We are evaluating now whether we want to continue that in 1984. This is the original buy of 42 aircraft. We are buying kits to modify our EC-130 to give it a [deleted] capability and I will talk more about these programs later.

Our MC-130, which is called Combat Talon, is a special operations force aircraft, and we are continuing with our helicopter procurement modernization for our combat helicopter force. By 1987 the positions are about the same. We have increased the number of E-3A's, EF-111's and started to enter our combat helicopters into the force.



All through the briefing you have seen the parts of the Active and the Reserve Forces that contribute to the Tactical Air Forces. I thought it would be useful to look at this together to see that we depend completely on the Air Reserve Forces: 66 percent of our air defense fighters, 54 percent of our reconnaissance, 36 percent of our rescue, 34 percent of TAC fighters, and 28 percent of our special operations forces. Because of that, we want them to be ready, as ready as the Active Force, and they are as ready if not more so in some cases.

RESERVE FORCE READINESS

They participate in these sorts of exercises—our red flag, blue flag, maple flag, JCS exercises, along with the Active Forces.

In this year alone, 40 to 50 units of the Air National Guard and Air Reserve Forces will go to red flag. In 1982 more than 300 units

will deploy, about 26,000 personnel will deploy. To see how good they are, they won the air defense championship in 1980 and this year they won the air-to-surface attack championship, so they are crackerjack outfits and we depend on them.

TACTICAL AIR FORCES—ANG/AFR MODERNIZATION FISCAL YEAR 1983

Action	Unit	Location
A-7 to F-16	169 TFG	McEntire ANGB, SC.
F-105 to F-4D	116 TFW	Dobbins AFB, Ga.
RF-4C to F-4D	187 TRG	Montgomery, Al.
0-2A to F-4C	163 TFG	Ontario, Calif.
C-123 to A-10	303 TAS	Richards Gegauer AFB, MO.
18 to 24 RF-4C	124 TRG	Boise, Idaho.
18 to 24 A-7D	192 TFG	Byrd Fld. Va.
4 A-7K		Various.

This slide shows you what we are trying to do to increase their capability in 1983. There are three things buried in here: First, we are getting rid of some of these older airplanes, O-2A's and C-123's, and we are modernizing them and changing their missions to fighters. We are also fleshing out some of our fighter squadrons from 18 to 24 aircraft and we are adding new fighters right off the production line. We are adding F-16's, A-10's, and A-7's.

That pretty well covers the first part of my briefing. I want to proceed on now and get into the individual programs.

Mrs. BYRON. Mr. Chairman, can I ask a question?

Mr. STRATTON. Yes.

Mrs. BYRON. When you are talking about the Guard units, you are increasing the Guard units with A-7's, you are going from 18 to 24 and you are not planning to make any increase in the Guard units on the A-10 force, which is still remaining at 18?

General RUSS. Yes, we have 18 UE squadrons; we have 24 UE squadrons in the National Guard. A wing has 72 airplanes. You can have four 18 UE squadrons or you can have three 24 UE squadrons. That way we have the Guard at the time, is four 18 UE squadrons. We could take one squadron and divide its 18 airplanes among the other units, but they have chosen not to do that. As you know, in Europe we deploy our A-10's forward into forward-operating locations.

Our wing in Europe has 108 airplanes in it and it is divided into all 18 UE squadrons. You have a choice, 18 or 24. We have chosen to put the 18 UE's in the Guard. We also have one 24-UE A-10 squardon in the Guard and a training outfit with 24 aircraft in the Air Force Reserve.

Mrs. BYRON. But you prefer the A-7 to go to 24 aircraft units?

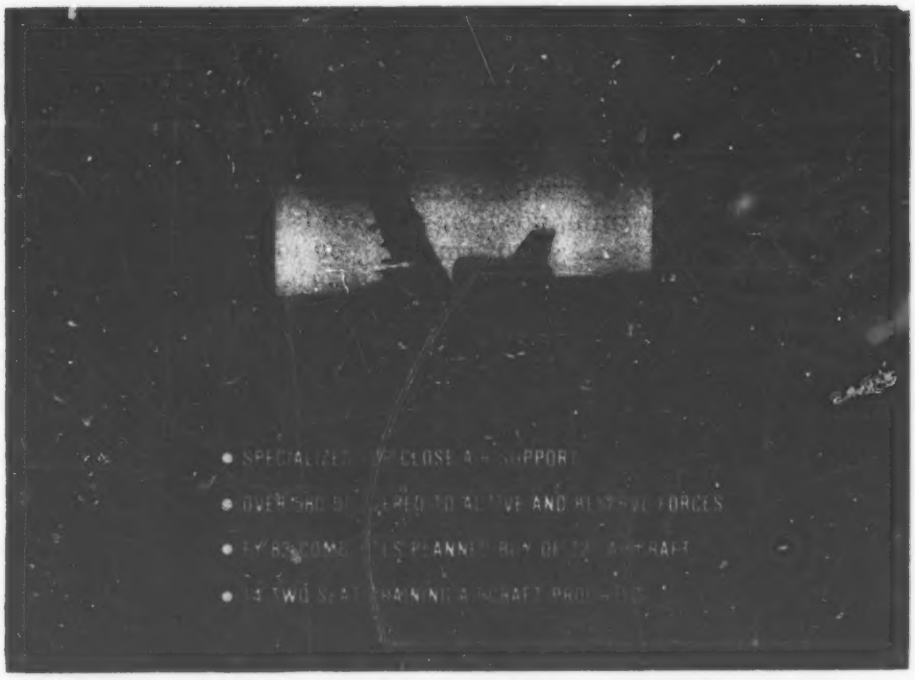
General RUSS. Yes, we do. If the base on which the A-7's are can handle it. Some of the Guard facilities will not handle more than 18 aircraft. A lot of them will. If we can get them up to 24 aircraft in the A-7 units, we hope to do that.

Mrs. BYRON. Thank you.

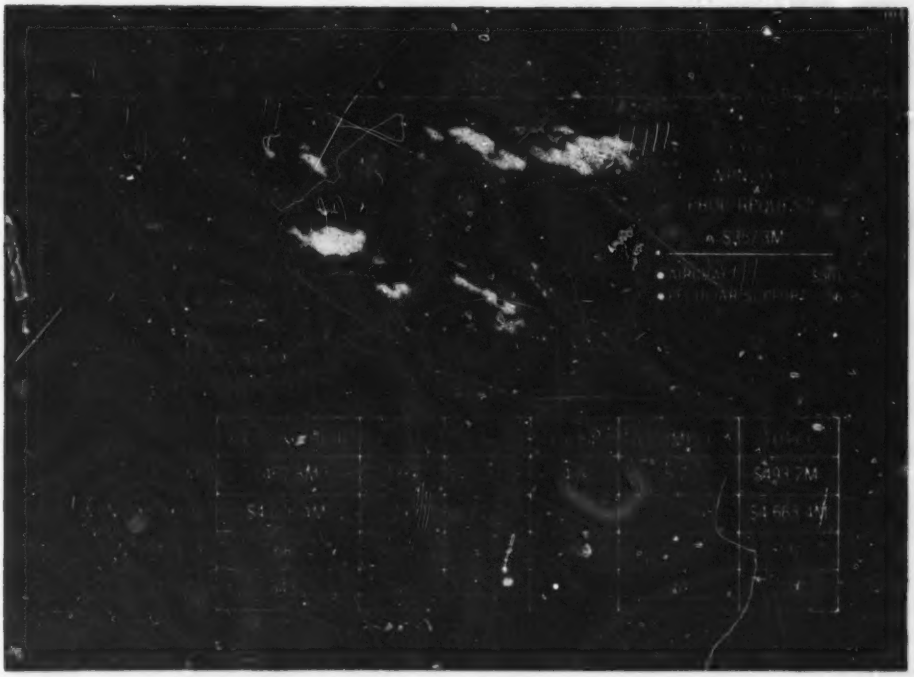
PROCUREMENT PROGRAMS

General Russ. Going into the procurement program, I divided it up and we will talk about airplanes first and then missiles, and then some weapons and some ECM systems, and then some other tactical forces.

To start out, I thought we would discuss the A-10 which is our specialized aircraft for close air support. As you know, we have over 580 of them that have been delivered to our force.



In our 1983 budget we would proposed to complete our 727 buy to include 14 two-seaters which would be delivered in the latter part of 1984.



Our budget this year is for $357.3 million and will buy 20 aircraft. As I say, these will be delivered in this timeframe.

We are very pleased with the A–10; it has done an excellent job for the Air Force.

Mr. STRATTON. Now, as a matter of fact, if it had not been for congressional intervention you were going to shut this line down entirely, were you not?

General RUSS. Yes, sir. At one point in time we had this line closing in 1983 and subsequently it was decided that we ought to continue the buy and finish off our 727.

Mr. STRATTON. You know, it is a little hard for us up here to understand this because we were led to believe that this was a very important aircraft; you wanted to buy more of them. Now you are suddenly closing the thing down or you are talking about closing it down. What change came about that let you to make that decision?

General RUSS. Sir, let me say that our original inventory objective for the A–10 was 733 aircraft. That is what we started out to buy when we laid out our force structure goals years ago. This buy will be six airplanes short of those 733 airplanes, so we think that while the program has had perturbations in the numbers, both up and down, we believe that considering the mix that we have in the

entire tactical air forces that this number is about what we need to do our job.

Mrs. HOLT. Mr. Chairman——

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. You are building up from 40 to 44 wings. Why is close air support not part of that projected force structure?

General RUSS. Mrs. Holt, it is very important, but let me say it is important that we have dual-capable airplanes that we can use for close air support and can use for air-to-air. The A–10 is a specialized airplane; it can only be used for close air support. It is not an interdiction airplane; it is probably the best close air support airplane in the world.

As we continue to build our force, we cannot afford to specialize on one sort of airplane; we have to be able to have some flexibility. With the additional four wings we hope to have flexibility to do both close air support, interdiction and air-to-air.

Mr. STRATTON. The procurement unit cost of 20 A–10's is $17.1 million. The total budget for the A–10 includes $46 million for peculiar ground support equipment and $9 million for data which you were not going to request had there been no aircraft requested.

Since there are no new units being created in the force structure, why do we need additional support equipment, and why would it not make more sense to buy this additional aircraft with this $55 million?

General RUSS. Sir, this is paying back what we didn't provide before. This is support equipment that we did not procure in the previous years because of the perturbations in the program. Because of the changes in price, the support equipment has taken a back seat somewhat. This is filling up our current units with the authorized peculiar support equipment that is on their logs.

Mr. STRATTON. Has the Soviet tank threat decreased?

General RUSS. No, sir.

Mr. STRATTON. Isn't this the only plane that we have that we can use for antitank activities? You sort of imply in your answer to Mrs. Holt that unless an aircraft can do three or four different things you really don't want it. This just happens to support ground forces and it is not really a good idea to have a plane that would just support ground forces—that would be unthinkable. They have to be able to fly high and fast and interdict and everything else.

This thing which is built primarily because this committee recognized back in Vietnam that we didn't have adequate ground support. After long and agonizing pressures, we finally got this aircraft. Now, while I thought the threat was increasing, you say, "Well, we can cut it off because it can't do all the other things that we would like it to do."

General RUSS. Sir, I think the tank threat is very formidable. We do have other programs which provide us antiarmor capability. We have 30-millimeter gun pods. We have rockeye munitions.

Mr. STRATTON. Thirty-millimeter guns can penetrate tank armor?

General RUSS. Yes, sir. As you well know, that is what this whole airplane is built around; it is built around a 30-millimeter gun. We have developed a pod that we can hang on our other airplanes that can do that job and they can also go back and do a deep interdiction mission, so it will cover more of a spectrum of missions.

Mr. STRATTON. Don't you have requirements for FMS purchases of the A-10?

General RUSS. Sir, the Fairchild Corp. is working, to the best of my knowledge, on several countries to sell the A-10 to them. I don't think they have any firm offers at this point in time. I don't know what the prospects of those are. That is all I really know about the FMS.

Mr. STRATTON. If we were to add another 20 of these to the buy, what would that do to the total cost, and what would that do to the unit cost?

General RUSS. I think, as you said, sir, that the unit cost is $17.1 million in 1983 dollars. That is a little deceiving. The reason it is, is because there is close-down cost in the line. Seeing it is the last of the buy, that is what it would cost. Now, if you increase that to 40 you would drop that unit cost to about $13.5 million a copy, so there would be a significant decrease in the unit cost.

Mr. STRATTON. Mrs. Byron, do you have any other questions?

Mrs. BYRON. Yes, Mr. Chairman.

Without the additional aircraft, will we be able to maintain the A-10 squadrons at their current force level beyond the early 1990's?

General RUSS. At current attrition levels; the force would start to attrit in the early 1990's.

Mrs. BYRON. If so, what do you plan to use for close air support at that time?

General RUSS. We will use the other airplanes, F-16's, that are dually capable. The alternative would be to continue to produce this airplane all the way through the timeframe.

Mrs. BYRON. It is interesting to compare the testimony today that you have just given and the fact that the Air Force needs aircraft that have multipurpose roles, yet just yesterday in the Marine Corps' presentation they made a very strong case for the Harrier along with the F-18 as an aircraft that they needed for a single-purpose role, and the Harrier met that criteria very strongly.

General RUSS. Mrs. Byron, I think it is important that we have both. We can't put all our eggs in one basket and have just specialized aircraft. We have to have both specialized and dual-purpose airplanes.

About 55 percent of the Air Force's fighter force is in the specialized area. We believe the other 45 percent ought to be in the multipurpose, multirole area.

Mrs. BYRON. What happens to the F-16 in close air support if the Maverick program is killed?

General RUSS. The F-16 has a multitude of weapons; it can carry all the weapons the A-10 can carry; it may be able to carry a 30-millimeter gun pod which the A-10 could carry; it carries everything the A-10 will carry.

Mrs. BYRON. And still gets off the ground?

General RUSS. Yes, Ma'am. This airplane is supposed to carry the Maverick, the same Maverick that the F-16 is supposed to carry. We design our armaments so that they will fit on as many aircraft as possible.

Mr. STRATTON. What kind of exercises have you gotten into with the Army and the Marine Corps in connection with this aircraft? I would think that before you decided to shut it down you would have to consult with the ground forces that you are supposedly supporting before you terminate it.

General RUSS. We run continuous exercises with the Army. In fact, the A-10's work almost exclusively with the Army. We train that way; we exercise that way. The Army is very satisfied with the support that they are getting.

Mr. STRATTON. Are they satisfied with your terminating the line, taking them away?

General RUSS. We have told that to the Army, told them what we are going to do, and they are satisfied that as long as we tell them we will give them the support they need, whether it is A-10 or F-16 or something else, they are satisfied.

Mr. STRATTON. Yes, but they weren't getting it with all the high-speed aircraft the last time they were fighting, and that is why we built this plane. The jets go by so fast that they don't even see the tanks down there. This disturbs me, that we build a plane and then after a couple of years we cut it off and we go to building some other; we keep cranking up additional production lines; we close out other production lines. It seems to me that this instability is one of our biggest problems.

I think we ought to stick with some of these for a little while. The Navy wanted to cut out the P-3C but the submarine threat is increasing, not decreasing, just the way the tank threat is increasing and not decreasing. They finally reconsidered.

Is this the idea, that once you get an airplane in the inventory and get a chance to fly it and find out all the problems, then it gets a little boring and then you need something new? I think the Russians use some of their old stuff. That is one of the reasons why they outnumber us so much.

Mr. Badham.

Mr. BADHAM. I am confused a little bit, General. You started in on the A-10 and I guess we all agreed that that is or was an aircraft that was built for the sole purpose of close air support of ground troops, offensive and defensive. You built it as a special-purpose aircraft. That was OK; I was buying that. I guess we bought 700 some. Then Mrs. Byron asked how long they are going to last and you said they are going to last into the 1990's. Then she asked, what are you going to do? You said we are going to use the F-16.

Now, if the F-16 is a close air support airplane, why do we need the A-10? If we need the A-10 now but are not going to need it in the 1990's, why not? I am confused by all this.

General RUSS. Let me say, first, the A-10 will be around until the end of the century. What Mrs. Byron was alluding to, I think, is the fact that you will start losing airplanes from your current force by the early 1990's because you are going to bust so many per year and therefore rather than having 700 airplanes we have 680. So, you do away with one squadron and you fill that squadron with something else. That is the normal way we do business.

But the A-10 is a very capable airplane to do that sole mission. The F-16 can also do that mission. I will say that the F-16 can do a lot more missions. The F-16 is more automated but generally it is more expensive. In 1983 the A-10 is more expensive; simply because we are buying 20 of these airplanes. If we were producing it at a higher rate then it would be cheaper than the F-16.

Mr. BADHAM. That still does not really grab me, General, because if we are buying A-10's to have around until they wear out, assuming they all either die or crash or break or whatever by the year 2000 or so, then we are going to use F-16's.

If the F-16 will do everything and more that an A-10's does, why do we have the A-10?

Excuse me. Let me try to help you get rid of my confusion. After I said OK, then why have the A-10 and after you come to grips with that, then if we have the A-10 and it is good and it will do and has done and is capable of doing everything that it is assigned to do, then wouldn't the answer to the question "What do you do when they wear out" more properly be put to this subcommittee, "then we build another one, an A-11, a follow-on aircraft?" Because you are saying there is really no sense, if we are going to build them, in having them for a while and letting them die?

General RUSS. You are right. We are talking about the 1990's when this airplane will be phased out of the inventory.

If we keep them for 20 years, which we say is the average life of a fighter, in the mid-1990's these will all be going out. We will need a good fighter to replace the A-10. We hope to get a very capable close air support airplane.

Mr. BADHAM. That gets me into one of my pet subjects. I admire your use of such terms as "next generation fighter" and "advanced tactical fighter", [ATF] and "next generation trainer" and I think it is about high time, because in my experience in the Congress we will build one thing and pick it up and get it going and all ready to phase out, and then you say, "Hey, we have to have another airplane," and then we have 10 years until we get through R. & D.

I hope we are beginning to get through this curve before one wears out and we start on the next one. Are you telling me now, hopefully, as the A-10 starts to phase out, we will look to the next generation close air support airplane?

General RUSS. Absolutely, sir; that is what we are trying to do, to keep a steady flow with the new airplane coming in so that our force has an average age of 9 to 10 years, and we don't have these peaks and valleys and these perturbations, and you buy 700 or 800 airplanes and by the time you get through with that you have another airplane that is available for you to buy.

You don't get on the roller coaster.

Mrs. BYRON. I have one further question on that A-10 issue:

We have spent a lot of time talking about profit and overhead and contractors' built-in assessment. If a contractor were to advise the committee in writing that he was prepared to adjust rates downward to a specific lower rate, cutting out some of the profit and moderating some of these overhead rates, would the Air Force be amenable to procuring additional aircraft with the funds saved, looking at the total dollars that you have allocated?

General RUSS. We would certainly like to look at what the contractor is willing to sign up to. I get proposals, as you well know, probably three or four a week, where somebody has a good deal for us. If the contractor can come in and give us a good proposal, which will save money and allow us to buy more airplanes or use them for some other purposes or enhance the ones we have, we certainly would like to see it.

Mrs. BYRON. The legal implications to the committee, would that be adequate for contract negotiation?

STATEMENT OF LT. GEN. KELLY H. BURKE—Continued

General BURKE. I don't think it would be legally binding, but I think we are dealing with responsible people and I don't think they would be telling you one thing and us another.

Mrs. BYRON. On your chart here on other tactical forces, I notice at the end of 1982 you have the [deleted]. Are you expecting any attrition in these aircraft?

General RUSS. Yes, we are. However, this is what we call a PAA number, which is the fighting force. We have a few other airplanes which are backup airplanes.

Mrs. BYRON. Because you are not procuring any more of those to fill in those blanks?

General RUSS. That is right.

Mrs. BYRON. That is a 5-year span which is pretty good if you don't expect any attrition in the 5-year span on these three aircraft?

General RUSS. That is right.

General BURKE. What he is saying is that the first buy chart understates the current inventory. When we buy aircraft we buy what is sometimes called PAA [Primary Aircraft Authorization] airplanes, and we buy some additional aircraft to provide for what euphemistically we call advanced attrition which means busting them.

Mrs. BYRON. Thank you.

Mr. STRATTON. OK, gentlemen, go ahead.

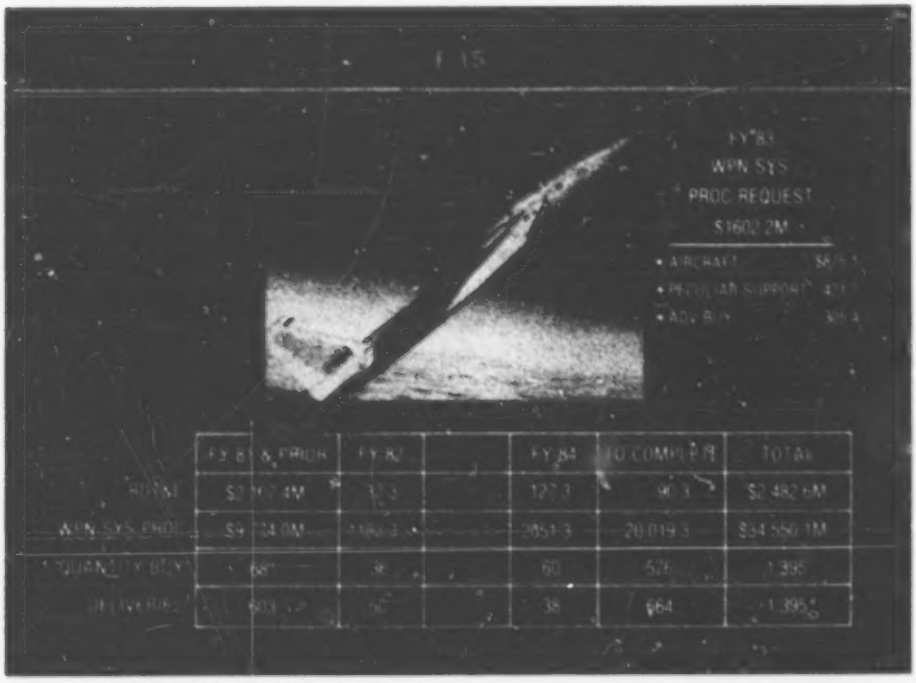
93-273 O—82——31

General Russ. Sir, our F-15 is our specialized air-to-air combat fighter. We have over 630 of them in the Active Forces. We have increased our buy to 1,395. As I mentioned before, our first air de-

• SPECIALIZED FOR AIR TO AIR COMBAT
• OVER 630 DELIVERED TO ACTIVE FORCES
• TOTAL BUY INCREASED TO 1395 AIRCRAFT
• FIRST AIR DEFENSE SQUADRON CONVERSION STARTED JAN 82

fense squadron conversion is ongoing and at Langley Air Force Base, Virginia.

Mr. BADHAM. Back to the F-15, what is the conversion to air defense?



General RUSS. What that means is that the F-106's that are currently——

Mr. BADHAM. I mean, what do you do to an F-15 to convert it to air defense?

General RUSS. You don't do anything to it. You put an air defense pilot in it and take a tactical fighter pilot out of it. It has all the inherent air defense capabilities in it.

Mr. BADHAM. Then somewhere in your testimony on F-15's I believe—well, in the F-15E, F-16E, you are going to have either one or the other. Now, what is the change there; is that to make it a two-seater like the dual-mission or multimission F-4 or what?

General RUSS. Yes, the F-15E version would be a two-seater airplane, two-seater F-15 airplane; it would be primarily for deep strike interdiction, but it would also have a backup role of air defense. With the two people you train them to do both of those missions.

Mr. BADHAM. Now, the increase to 1,395 is from what?

General BURKE. 729 was our original proposal. It is probably not the best way to look at it. That probably is not a correct number either. To sustain a tactical fighter force of 40 wings which we are now authorized, and if we were to meet our general goal to retire fighters when they are 20 years old, you would probably want to buy 250, 270 fighters per year.

When we set these original goals for both the F-15 and the F-16 we were looking at a new generation fighter in the 1980's but now we have steadily pushed that off in time until now it is no earlier than 1993. We did that because I think we all agreed that the pace of airframe and aircraft engine technology was not sufficiently fast to warrant going to another generation. The pace of electronics growth was such that you see throughout this is electronic improvements to existing airplanes.

Mr. BADHAM. Airframe and engine growth is not as fast as we originally suspected it might be, and this has the capability to do the job with advanced electronics?

General BURKE. That is correct. We are updating these airframe and engine combinations, which are pretty good, and looking to the mid-1990's for a new fighter. I think those numbers don't have a whole lot of relevance. It is just a best guess made many years in advance of the actual event.

Mr. BADHAM. When and how will you decide this competition between the F-15E and the F-16E?

General RUSS. We expect to start doing some testing this year and we expect to make a decision in fiscal year 1983, and then start full-scale engineering development. We will orient the competition not toward avionics competition but toward airframe competition. In other words, we want to see how far we can go, what is the range payload, what the ride qualities are. We know we can put a good radar in either airplane. We know we can put whatever avionics we want, so it is going to be primarily oriented toward the maneuverability of the airplane and range payload characteristics.

Mr. STRATTON. General, you intrigue me here. You told Mr. Badham that to convert the F-15 to air defense you would take out a fighter pilot and put in an air defense pilot?

General RUSS. That is probably an oversimplification, sir.

Mr. STRATTON. Don't you have dual-capable pilots?

General RUSS. Yes, sir, we certainly do. I am just saying that at Langley, for instance, there is a bunch of pilots on one side that report through the air defense channels and their mission is air defense. There is a bunch of pilots on the other side of the line that are there for tactical fighters and they deploy all over the world.

All we are going to do is give those air defense pilots new airplanes.

Mr. STRATTON. I see.

General BURKE. I can assure you that the air defense pilots like to be thought of as fighter pilots.

General RUSS. I was a fighter pilot once and an air defense pilot once, both sides, and I agree completely.

Mrs. BYRON. Can I ask a question that kind of concerns me on air defense?

Are you planning to replace the five F-106 squadrons with the F-15's in the North American defense role?

General RUSS. Yes.

Mrs. BYRON. Yet you are also planning to put two squadrons of F-16's in the Reserve for air defense. If the F-16 with AMRAAM can do the job why are we buying the F-15's for this role? And if it can't do the job, then why are we doing it the other way around?

General Russ. That is a very good question. Let me say that, first, the F-16 can't do all the roles. As you know, we are developing an [deleted]. So, that has to be done by the F-15. When we looked at the F-15 we decided we ought to have a high-low mix in our air defense forces.

We came up with about five squadrons of F-15's and five squadrons of F-16's. Now, the F-16 is a very capable airplane [deleted] capability that the F-15 does. It does not have the range payload or overall radar volume that the F-15 has. So, when you put the two together you can get some sort of synergistic effect.

• MULTI NATIONAL SWING FIGHTER
• OVER 300 DELIVERED TO ACTIVE FORCE
• FIRST F-16's TO RESERVE FORCES IN FY 83
• TOTAL BUY INCREASED TO 1985 AIRCRAFT
• MULTI YEAR PROCUREMENT INITIATED IN FY 82

We believe the smart thing to do is to buy some lesser-cost airplanes rather than build the force with all F–15's.

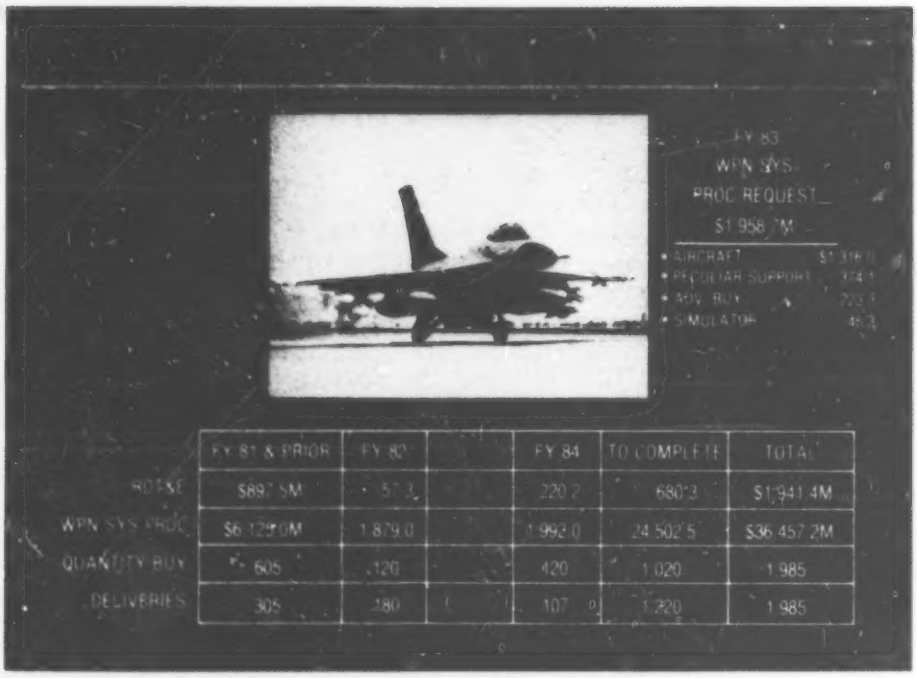
Mrs. BYRON. You feel the Reserve units are the ones that can best meet the role of the F–16's?

General RUSS. I think that they could fly F–15's as well, but a good percentage of the Reserve Forces are in the southern area. We have put them down there. We could have given them F–15's but there are no F–15's in the Reserve Forces now. But there will be F–16's in the Reserve Forces in the TAC role. We felt the commonality was the smart way to go.

The other thing that I think is important is that we don't get an F–16 with an [deleted] capability which you have to have for an interceptor until 1986. You have to have an interceptor that [deleted]. We don't get that capability on the F–16 until about [deleted]. That is the earliest we could modernize.

Our F–106's today are 22 years old; they are not going to be around much longer.

Mr. STRATTON. Do you have more on the F–16 there?



General Russ. Yes, sir. On the F-16, as I mentioned before, we are requesting $1.9 billion this year. We are procuring 120 airplanes. We are on a multiyear contract for 4 years at 120 per year.

Mr. Stratton. Let us stop at this point, because we have a lot of questions on the F-15 and the F-16. I think instead of going on to the missiles, it would be better for us to recess and come back at 2 o'clock and then we can run the questions by you.

Is that all right?

General Burke. Fine with us, sir.

Mr. Stratton. We will stand in recess until 2 o'clock.

[Whereupon, at 12 noon, the subcommittee was recessed, to reconvene at 2 p.m. of the same day.]

Afternoon Session

Mr. Stratton. The subcommittee will come to order.

General Russ, we have a number of questions here with regard to the F-15 and to a lesser extent I think perhaps some of the others:

How much money is in the request to provide the F-15 with an air-to-ground attack capability?

General Russ. Sir, we currently have in the research and development area $26.3 million to develop the derivative of the F-15. There is no money in the procurement account in 1983.

Mr. Stratton. Does the F-15 have a weapon computer and a stores management system?

General Russ. Yes, sir.

Mr. Stratton. Suitable for this function?

General Russ. The current capability of the airplane will allow you to drop single stores off single stations. If you want to drop

multiple stores off station, then you have to increase the capacity of your weapon carriage.

Mr. STRATTON. I am not an air-to-ground attack expert. Does an air-to-ground attack pilot want to drop multiple stores or individual stores?

General RUSS. Multiple stores; it allows you to carry more bombs on the airplane and you don't have to go back as often.

Mr. STRATTON. It does not have a stores management system adequate to the mission that you are proposing to assign to it?

General RUSS. No, sir; changes would be required to include nuclear capability which is not in the current aircraft.

Mr. STRATTON. How much would that cost to put it on?

General RUSS. I don't know what the cost is, but I can provide it for you, sir. It would be developed in the research and development area as we proceed with the aircraft.

I might say that the total aircraft cost as we envision it now to send the F-15E through a full-scale development with that capability is a little under $200 million. That includes all of those things you are talking about as well as others.

Mr. STRATTON. That includes the modification and the aircraft intermediate support, the AIS?

General RUSS. Yes, I think it does.

Mr. STRATTON. Is that figure also intended to include the simulator aircraft support, racks, pylons, et cetera, for providing all-weather/ground-attack capability?

General RUSS. No, sir; those are all in procurement accounts; it would be in the procurement accounts if we chose to buy this airplane. The money I am talking about is in the research and development account. There is no money in the procurement budget.

Mr. STRATTON. Can you give us estimates of what those particular things would cost if you decided to buy them?

General RUSS. Yes, sir. We will be happy to.

[The following information was received for the record:]

STORES/MANAGEMENT SYSTEM FOR F-15

In order to properly support the full F-15 air-to-surface derivative, there will be changes/additions to all affected equipments, auxilliary mission equipment (AME), and spares stocks.

Development cost of required modifications to the avionics intermediate shops, other support equipment, data, and training equipment has been estimated at $35M (TY). The impact to spares, war reserve supply kits (WRSK) and base level stocks (BLSS) has been addressed as part of total spares projections in fiscal year 1985 and out. Specific cost estimates for spares impact are not available but are proportionately insignificant (2.5 to 4 percent).

Weapons pylons (MAU-12) have been and are procured with each aircraft for carriage of the 600 gallon fuel tanks. Racks will be provided as AME. The BRU-26 multiple stores rack has already been developed and is in flight test certification. No quantity production cost estimate has been obtained.

Mr. STRATTON. What is the number of aircraft that you intend to modify?

General RUSS. Sir, we are not intending to modify airplanes; we are intending to procure 400 additional aircraft. They may be F-15E or they may be F-16E's.

Mr. STRATTON. The $200 million is just for what, the stores management?

General RUSS. No, sir. The current aircraft is a single-seat aircraft. The "E" model would be a two-seat aircraft. The $200 million would

put in the back seat of the airplane and missionize it. It would include in the aircraft such things as nuclear wiring so that it could do strike missions. It would upgrade the computer so that it could employ additional types of new weapons. Those are the sorts of things that would be conducted during the full-scale engineering development.

Mr. STRATTON. How suitable is the F-15 airframe to the demands of a ground attack mission?

General RUSS. Well, we believe it is an excellent airframe; it has a good capability, good accuracy capability. We demonstrated it before in the initial testing of the aircraft some years ago. It has a large capacity for growth and it can carry a lot of bombs.

Mr. STRATTON. Is the wing point design, whatever that means——

General RUSS. Sir, you are probably referring to hard points on the wings, so that we can carry weapons. Yes, there are hard points on the wings to carry weapons. They were designed in when we initially bought the aircraft.

Mr. STRATTON. You say that the airframe is actually suitable for ground attack missions?

General RUSS. Yes, sir. We consider it will be an excellent air-to-ground airplane.

Mr. STRATTON. Are you familiar with the flight manual of the F-15A/B, August 7 and updated December 1, 1979?

General RUSS. I am familiar with the flight manual. I am not sure I am familiar with the page you are on.

Mr. STRATTON. I am on page 6-4, change 5, which says as follows:

> Low altitude high speed flight. Due to low wing loading and high lift characteristics of the wing, low altitude/high-speed flight can be quite uncomfortable. Flight above approximately Mach 0.8 at low altitude in moderate to heavy turbulence may induce violent vertical and rolling motions, making control of the aircraft difficult. Formation flight should be avoided under these conditions. Speed brake extension or retraction can cause large pitch transience in this regime. With CAS off or with wing-mounted stores, flying qualities are further degraded. Low altitude/high-speed flight should be approached cautiously and pilots should be familiarized with these flying qualities before operational missions are attempted.

General RUSS. Yes, sir; I am familiar with that. That remark generally applies to the aircraft in air-to-air configuration. While it is not specifically stated there, I have read it and that is what it is intended to mean. But we did have a concern about the ride quality of the F-15 at low altitude. That is one of the things that we would demonstrate in this demonstration that we are going to conduct this year with the F-16, to see whether it will really do the things that we think it will.

We have high confidence that it will, but until we have proven that, we don't believe it is prudent to state it absolutely.

Mr. STRATTON. You say what would happen to the F-15 in the air-to-air configuration. Why do we propose to use a plane that has this kind of problem flying at low altitude, high-speed flight when it has this particular problem?

General BURKE. If I understood you correctly from your reading, sir, you were talking about moderate to severe turbulence.

Mr. STRATTON. Violent vertical and rolling motion, that is a little more than moderate turbulence.

General BURKE. I thought the caution applied to weather conditions in which there was moderate or severe turbulence.

Mr. STRATTON. It does not say anything about severe turbulence. At low altitude and moderate to heavy turbulence, yes.

General BURKE. Those are good conditions to avoid in any airplane, Mr. Chairman.

General RUSS. Mr. Chairman, let me say I have flown the F-15 at 650 knots at 200 feet. It is not as smooth as you would like but it is certainly not a violent, uncomfortable ride. I have also flown a B-52 at that altitude. Let me assure you that the B-52 ride is a lot rougher than the F-15 ride. But we are concerned. We have not determined yet whether it is going to be as smooth as we would like it, and we will test that.

Mr. STRATTON. What specific mission do you have in mind for the air-to-ground equipped F-15's? That would be dropping ordnance, right?

General RUSS. Yes, sir. As you recall that chart that I showed earlier, it would augment the F-111 in the interdiction role and would generally go against choke points, assembly areas, lines of communications, those types of targets. It would not be employed in a close air support role at all.

Mr. STRATTON. Are you planning an all-weather or under-the-weather capability?

General RUSS. Sir, it is an under-the-weather capability airplane which has a capability to grow to all weather, but at the present time we are planning on under-the-weather capability.

Mr. STRATTON. The Congress has repeatedly denied authorization for programs such as the ATF and the ETF for night, all-weather missions. Isn't this mission requirement actually being met by the F-111 fleet?

Mr. STRATTON. Sir, the F-111 fleet does a superior job but we only have a handful of them and they are slowly being attrited through crashes and not near enough to do the job. We need to augment that capability with another aircraft and our analysis shows that the best alternatives are either a derivative of the F-15 or a derivative of the F-16.

Mr. STRATTON. How many do you have left?

General RUSS. We have four wings, two wings in Europe and a training wing in the United States, and another wing where the vast majority of them are being converted to the EF-111, our standoff jammer.

Mr. STRATTON. Considering that the B-52 is still flying, what is the average flying time left on the F-111 frame at current utilization rates?

General RUSS. It is past the year 2000, sir, if they are all around by that time. We attrite about 1.5 percent per year. I don't know what that would amount to by that time. It is a super airplane and we will fly it as long as we can.

Mr. STRATTON. The F-111 does have a greater range pay load capability than the other fighter aircraft and it is capable of all-weather/low-level penetration and attack?

General RUSS. Yes, sir.

Mr. STRATTON. In this regard, it is [deleted] in the tactical force, is it not?

General RUSS. It is [deleted] because it is the [deleted] that has that capability.

Mr. STRATTON. Why don't you fix up the readiness of your F-111 aircraft to do all of the things and more that you expect to attain by investing in a new capability for the F-15?

General RUSS. We are fixing the F-111, fully sparing it, but it is a matter of numbers, sir. We cannot manufacture any more F-111's; therefore, we will have a shortfall in the total force. You have to get something and the next best alternative is a derivative of the F-15 or F-16.

Mr. STRATTON. As I say, we have kept the B-52 going for a long time. We could keep this one going for a long time, could we not?

General RUSS. Yes, sir. We have no problem in keeping it going. It is just that there are not enough of them.

Mr. STRATTON. Somebody wanted to build them in place of the B-1B. Do you have any plans for modernizing the readiness of the F-111 fleet?

General RUSS. Yes, sir. We are looking now at improving the avionics package in it. We are also looking at improving the test gear on the airplane to increase the reliability and maintainability of it.

We are buying all the spares needed to fly it at its wartime rate.

Mr. STRATTON. Does anybody else have any questions?

Mr. White, do you have any that I have not thought of?

Mr. WHITE. No, sir.

Mr. STRATTON. Or that you haven't given me?

Mr. WHITE. No, sir.

Mr. STRATTON. Mr. Badham.

Mr. BADHAM. I will ask one question: Last year and 2 years ago when we were talking about taking 150 of the F-111's and making them into FB-111H's, some of us raised the question at that time if there is a fighter role or a mission for the F-111, how is that mission going to be replaced, and if there isn't a mission, why do we have them? General Ellis, whom we know and respect very highly and very greatly, said, "It is not my job; it is not my problem." It would have had to have been an F-15 put in that role?

General BURKE. Yes, sir. That proposal was to transfer a wing of the F-111D's from the TAC air forces and convert them into the strategic version and put them in SAC.

I must say the tactical air commanders did not think too highly of that. The Air Force corporate view was just as yours was—they were performing a useful mission and ought to stay where they were.

Mr. BADHAM. The F-111 really has found a mission and is a valuable asset?

General BURKE. I think it is a remarkably good airplane for that role. It is really interesting to me how long it looks like it is going to last in that role. The F-111 had sort of a tortured beginning and a lot of bad press, but once in the inventory it has performed very, very well. In fact, our allies, the British, Germans, and Italians, are building an airplane right now, brand new, and will for a number of years—the Tornado—which does what the F-111 does.

Mr. BADHAM. I think one of the difficulties was that people were thinking it was something that it really wasn't and trying to give it a role that it didn't have.

General RUSS. We had management problems and big cost overruns.

Mr. BADHAM. Any guess on the E model, whether it will be F-15 or F-16?

General RUSS. I think either airplane will do very well. I think we are in the happy position of having two good choices. It is just a question of deciding which is the better. I don't have a tilt one way or the other right now.

Mr. BADHAM. The F-16 is not too light to load all the other requirements on it; is that correct?

General RUSS. To move into the F-16E we would definitely need to substantially modify the F-16, which has what is called the cranked arrow wing, becomes a bigger airplane. General Dynamics at their own expense is building two of them and the first one is to roll out in June and fly in July. We will get a pretty good idea how that will work.

The wind-tunnel data done by NASA rather than GD has been quite encouraging.

Mr. BADHAM. There is growth in that engine?

General RUSS. The supercritical wing they put on there provides great benefits in range and payload without giving up other features. It is a little hard to believe, because it is almost like a free lunch and we have learned over time there are not many of those.

Mr. BADHAM. It is my understanding in Red Flag with similar aircraft, there was a proposal to use F-5G models for that, and some were going to be procured this year. What has happened to that?

General RUSS. There was some discussion of that. The Air Force view was that we don't need additional aircraft for that purpose other than the handful of F-5F's that we are buying in 1982 and 1983, and that adds up to about 11 aircraft, as I recall, and that was just to replace losses over the years. We didn't feel that we needed a large addition and we didn't think the F-5G was an appropriate airplane for us; and therefore there is no money in the Air Force budget for that purpose. I understand there is money in the special defense acquisition fund that is identified with the export fighter which could be either the F-5G or the F-16 with the J79 engine in it.

Mr. STRATTON. Mrs. Byron, do you have any questions?

Mrs. BYRON. No questions.

Mr. STRATTON. Mr. White.

Mr. WHITE. I have one question: If the Congress goes along with the proposition which you have already started with one squadron, building five squadrons of F-15's in the North American defense mission, the Air Force proposal is to take those out of TAC and move them into that as they have already done with that one squadron, and to replace those F-15 TAC squadrons with new F-15's as they come off the line; the aircraft that are in the 1983 budget get delivered in 1985, early 1986 time-frame, and if you are as optimistic about AMRAAM as you indicate, AMRAAM becomes available in that timeframe, not in large numbers, but within a couple of years you are building up. Last year you sold the multiple-stage improvement program to the F-16 to improve the radar to make it AMRAAM capable so that essentially the aircraft that are coming off the multistage improvement line will be firing the same missile within a couple of years as the F-15's, don't have as capable a radar but setting aside the deep interdiction mission, setting aside the North American air defense mission, why is it neces-

sary to replace the F-15's that you are pulling out of TAC with more F-15's instead of F-16's, which come in at a little more than half the cost?

General BURKE. Actually, our proposal is to buy about two F-16's for each F-15 we buy. That is the ratio as we build up, we reach a position of buying 180 F-16's a year and 96 F-15's.

Mr. WHITE. You are buying 96 F-15's while waiting to decide where to go on the 400, I think, F-15 or F-16E's, which suggests you are not replacing the F-15's in the TAC air-to-air combat fighter roles with F-16's as you divert the others over to the North American air defense role.

Are you putting F-15's in both places? Why can't you put F-16's where you are taking the F-15's out of now?

General BURKE. You could.

Mr. WHITE. On a 2-for-1 exchange ratio, why is it not more cost effective to do that?

General BURKE. I think another way to look at it is that to maintain our fighter force about as it is, we need to buy 250 or 270 tactical fighters a year. We won't have a new fighter before the mid-1990's. That means that we have many hundreds of fighters to buy, a few thousand fighters to buy. That being so, I think we clearly would like the competition of two choices.

Additionally, I think we should maintain two production lines for expansion purposes in the event that was needed; and having decided to keep the F-15 and the F-16 lines open, about 2 to 1 F-16's over F-15's seemed to be about the ratio to use.

General RUSS. Mr. White, I might also add that the [deleted]. So, when you consider that portion of the threat, [deleted]. It also has a much larger radar volume and therefore it can look a lot longer, it can carry more weapons.

There are a lot of things that it can do and do better than the F-16. It does not mean that the F-16 is not a good airplane; it is an excellent airplane. We think the synergism of the two planes together will give us the high-low mix and give us the maximum capability.

Mr. WHITE. I think the one point that the Congress—not so much this committee as the rest of the Congress—will find some frustration with is that the F-16 came on as the low end of high-low mix because you could not afford to buy more F-15's. Once you did, then you came with the proposal to grow the capability of the F-16 with the MSIP program to improve the radar to make it a much more capable aircraft, yet the more capable it has become, the greater your high end of the mix requirement has become.

We are not getting any offsetting advantage on this.

General RUSS. I just don't think we would want to lock ourselves into a single-fighter procurement between now and, say, 1993 or 1995.

Mr. WHITE. If one of them is basically half the cost of the other and the surge capability is there to go, what is the payoff in two warm bases?

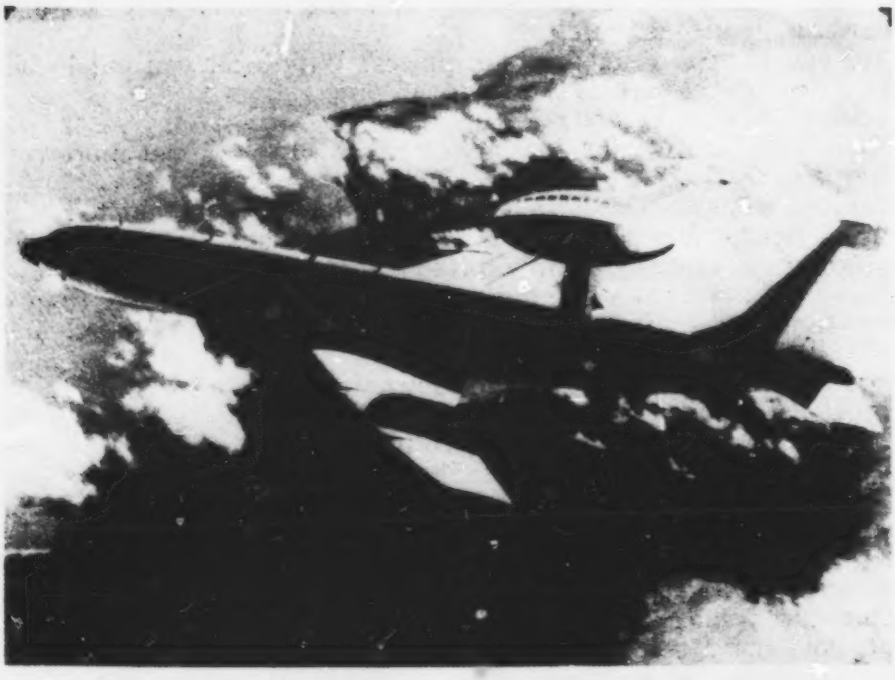
General RUSS. One is that you keep competition and you get a better product from both of them.

Mr. WHITE. A $28 million aircraft does not compete with a $16 million aircraft very effectively; does it? It is so much of competitive issue?

General RUSS. I think so. We have a very serious competition underway in regard to this derivative. I think the F-15 and the F-16 will compete very closely there.

If you do accept the notion that it is desirable to have the two production lines both for competition and for surge, then the only question is, what is the division? We think about 2 to 1 is right. Others might think 3 to 1; others might think 1 to 1.

Mrs. BYRON. We go now to the Sidewinder.



• AIRBORNE JAM RESISTANT RADAR SURVEILLANCE AND
CONTROL SYSTEM
• SUPPORTS GLOBAL TACTICAL REQUIREMENTS AND STRATEGIC
CONUS DEFENSE NEEDS
• DELIVERED TO ACTIVE FORCES
• TOTAL BUY INCREASED TO 46 AIRCRAFT

General RUSS. We have been asked to cover these two subjects first, and they would have to come later on, so if you will allow me, the E–3A is a radar surveillance aircraft; it is designed and built for both air defense purposes and for worldwide deployment for tactical purposes. So far we have 25 of them delivered to the Active Forces; 24 of them have the standard radar; the 25th one has the radar and the computer capability that is going on the NATO aircraft which will be standard in all our later aircraft.

We have increased our total buy to 46 aircraft. Last year our buy was 34.

Mr. BADHAM. What kind of engine goes on the E–3A?

General BURKE. It is the JT3D.

Mr. BADHAM. That is being newly produced?

General BURKE. Yes, sir.

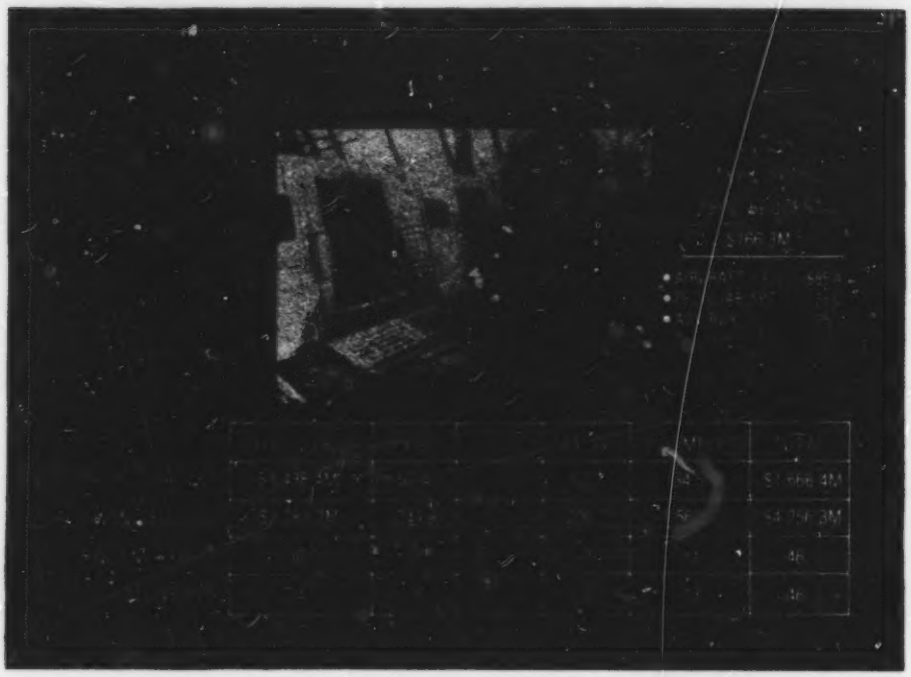
Mr. BADHAM. Why don't you use the CFM56?

General BURKE. This program preceded the CFM56. When it got started the CFM56 did not even exist. People have talked about converting that. As an interesting aside, the French are showing a great deal of interest in an AWACS right now, the E–3. I think it is quite likely if they buy it they will want the CFM56 on it.

Mr. BADHAM. What is the relative capability comparison between the JT3D and the CFM56?

General BURKE. I would think the CFM56 would probably give it 20 percent more range or endurance.

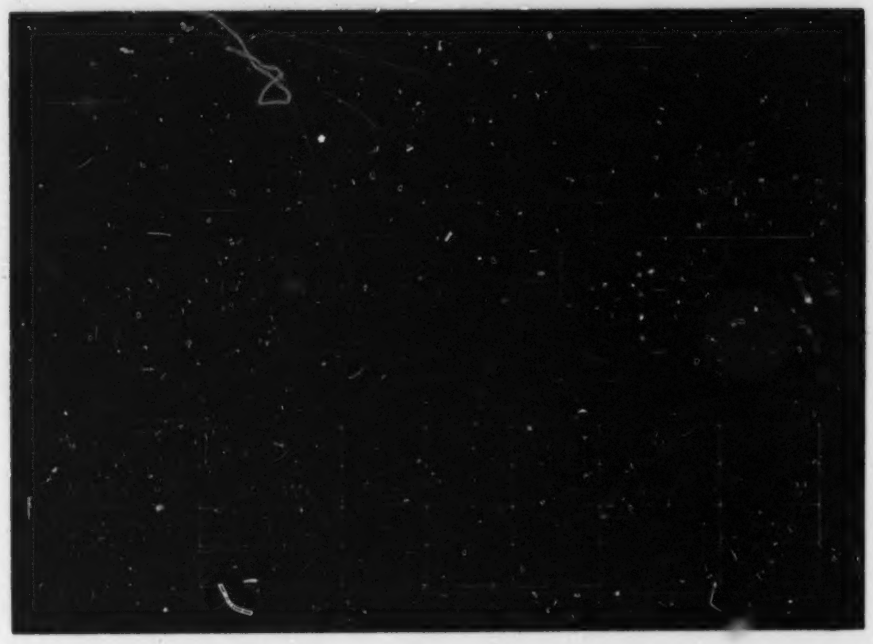
General RUSS. In general, it stays airborne, going out on patrol and coming back, about 11 hours. You can double that by inflight refueling.



In 1983 we are asking for $166.3 million to buy two aircraft E-3A. We will then buy one aircraft in 1984 as the Saudi aircraft start to be procured. We will continue to buy them at about a two or three pace for several years.

In the program is the TR–1, which is our high altitude reconnaissance airplane. This platform will be used for both reconnaissance and for our Precision Location Strike System. What we do is just change the nose. The nose snaps off and you put a reconnaissance nose on it for one thing and another nose for our Precision Location Strike System.

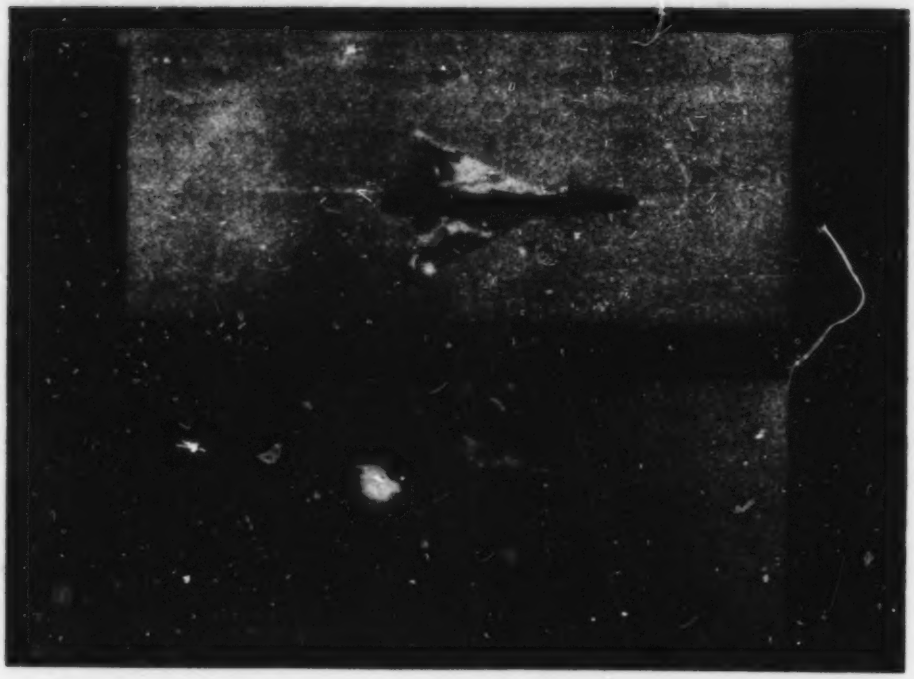
We received our first aircraft last year and our first deployment will occur to the United Kingdom in [deleted].



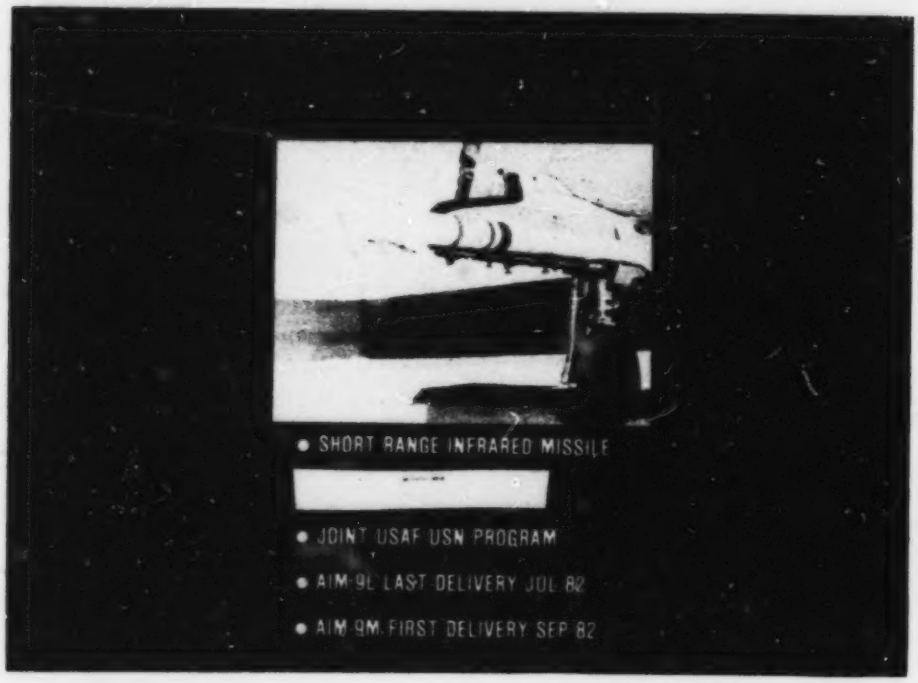
Now, we have had some problems with this and primarily with cost growth. Back in 1980 we had a cost overrun and we have just gone through a reprograming over here on the Hill. Our 1981 buy is for four aircraft. We are now negotiating our 1982 buy and that may or may not come out with five airplanes. All that is in negotiation at this point in time.

I will say that it has overrun and the primary cause of it is that the overhead has been spread over a narrower base. Lockheed builds the aircraft and the L–1011 cancellation has resulted in a price increase in this, and there is also an increase in the airplane itself.

Now I would like to move on to the antiaircraft missiles.



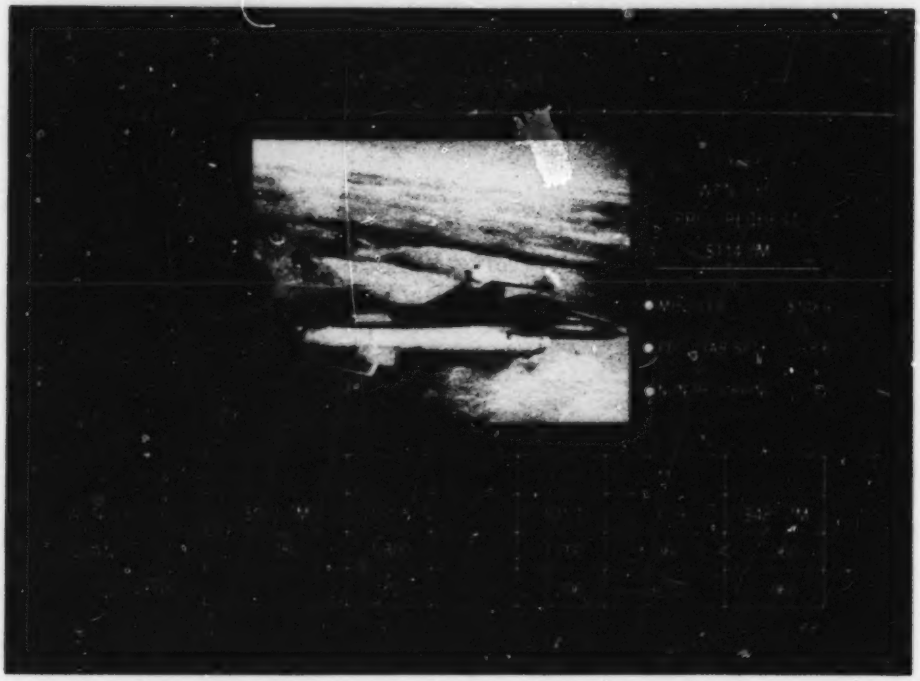
We will start with a look at the AIM-9 Sidewinder. This is a short-range infrared missile; it has all aspect capability. That means you can shoot it 360 degrees around the airplane.



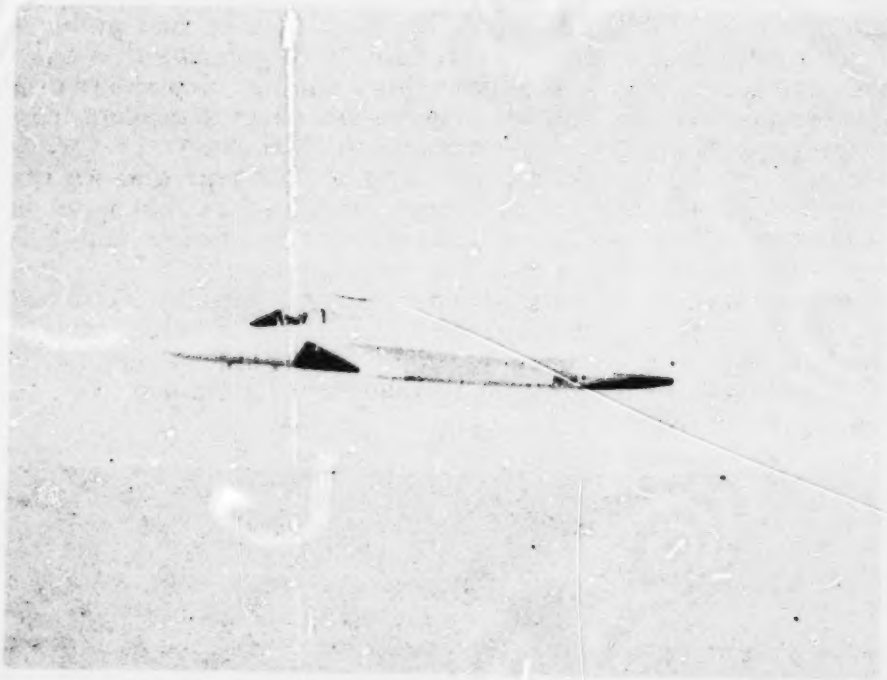
This may be difficult to see, but this is a shot of the missile attacking this QF-102 drone from the front quarter and giving us that capability. It is a significant capability considering that only a few short years ago we had to get behind another airplane to shoot up its tailpipe to shoot it down. Now we can shoot it headon. It is a joint program of the U.S. Air Force and the U.S. Navy.

We will get our last AIM-9L in July of this year and we then start our AIM-9M delivery in September. The AIM-9M is an improved version; it works better against flares and decoys and it has a smokeless motor and is a much improved weapon.

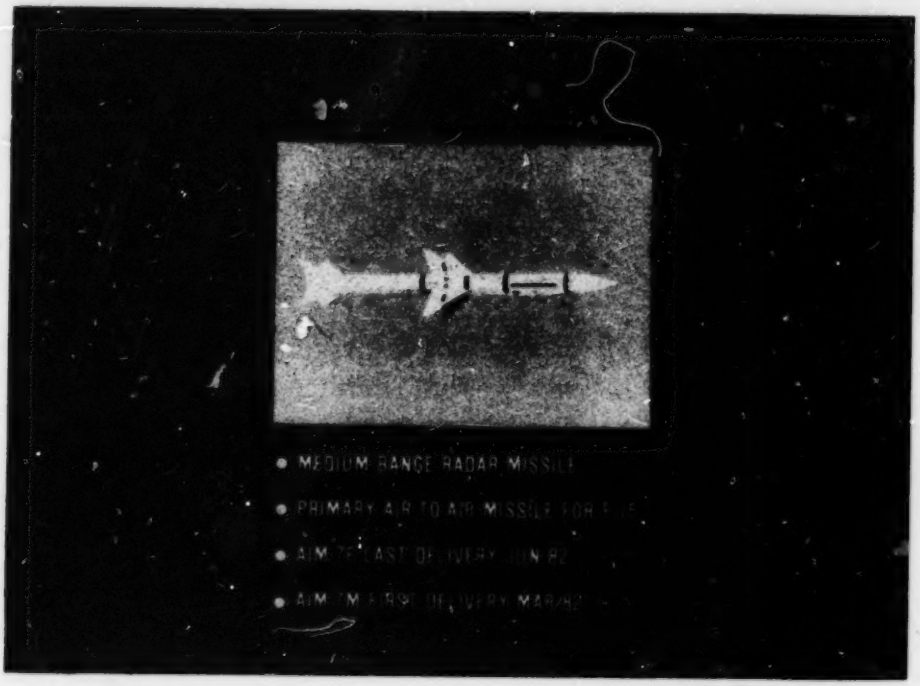
Now, we have been short of our air-to-air missiles—you have seen articles in the paper—and this committee has helped us to increase the buy in the last few years, but back in 1980 we only had [deleted] percent of our inventory requirements funded. You can see through 1985 we will [deleted].



That depends on the profile that you see here, where we are buying 1,920 missiles in 1983 for $114.7 million.

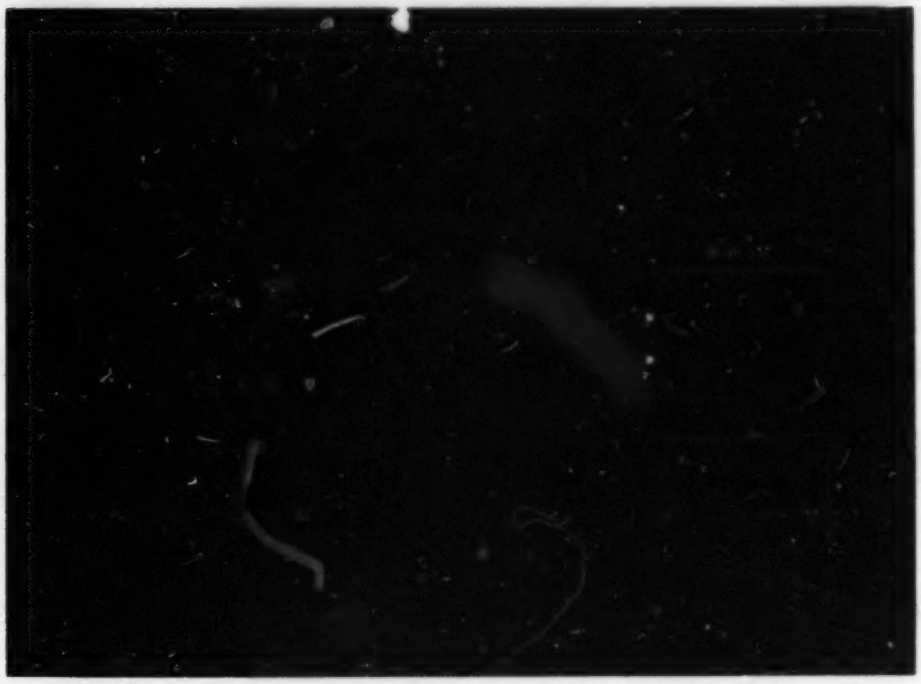


The second major missile that we have on our fighter forces is the AIM-7 Sparrow, the medium-range radar missile. It is the primary ordnance on the F-15. We procured the AIM-7F for quite a

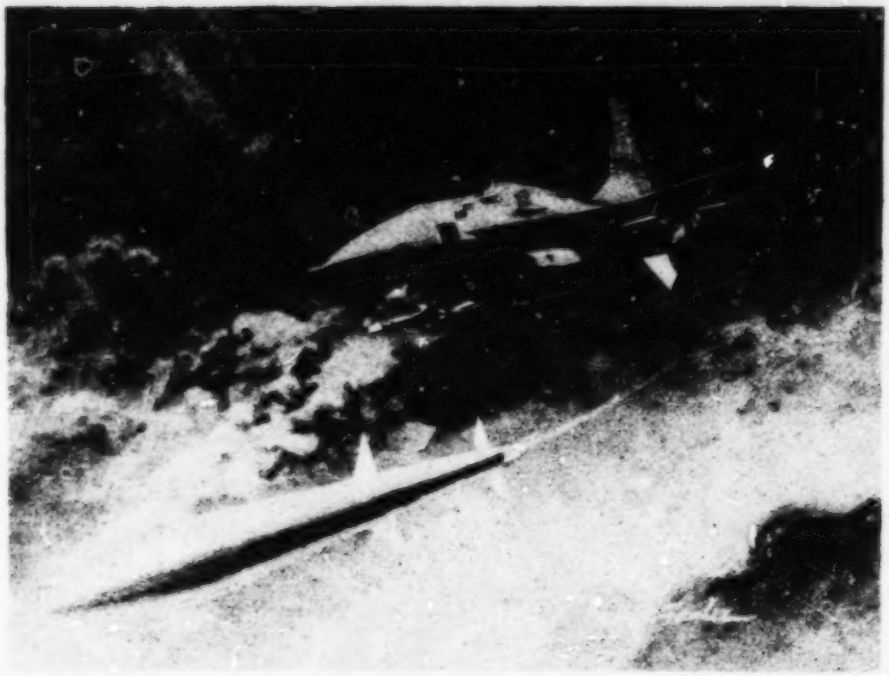


few years and will be getting the last ones in June of this year and will start our AIM-7M deliveries this month.

A similar chart showing where we have been and where we are going. Thirty percent funded back in 1980. We have set upon a course to build that all the way up to [deleted] of our inventory. The reason this funding line does not go up to [deleted] percent is because—as I will show you in a minute—the AMRAAM comes in in this timeframe and therefore that will fill the rest of the inventory.



For that profile we are asking for these quantities—1,300 in 1983 and spending $198.6 million.

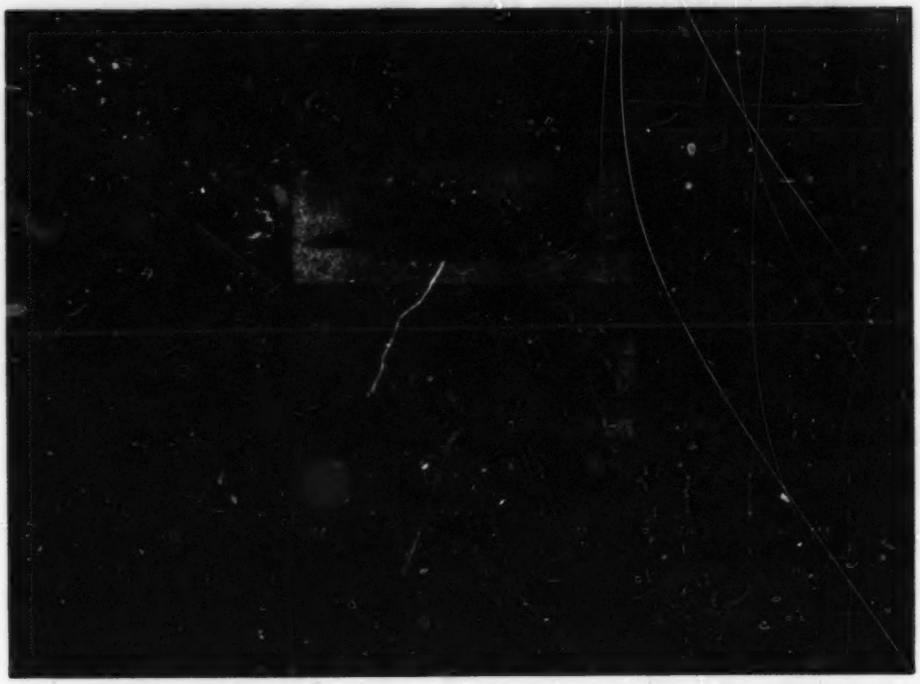


The third missile is our Advanced Medium Range, Air-to-Air Missile, advanced AMRAAM. It will be the primary ordnance for both the F–15 and the F–16. [Deleted.]

• ALL ENVIRONMENT ALL ASPECT RADAR MISSILE
• REQUIRED TO MEET NUMERICALLY SUPERIOR THREAT
• WILL BE PRIMARY ORDNANCE FOR F-15 AND F-16
• COMPETITIVE VALIDATION COMPLETE
• FIRST PRODUCTION DELIVERY LATE 1985

This will give [deleted]. We had a competitive validation; that is complete. Hughes Aircraft won the competition and we now have a fixed-price type contract with Hughes for full scale development with options for the first three production lots. We expect the first production delivery in late 1985. We get them in this timeframe here.

Here is our funding line. We get the first missiles and we start building here—indicating. I might say that AMRAAM is a joint program with the Air Force and the Navy and also the Europeans are interested and we have a memorandum of understanding with the British and the Germans and they plan on incorporating the AMRAAM missile in their aircraft.

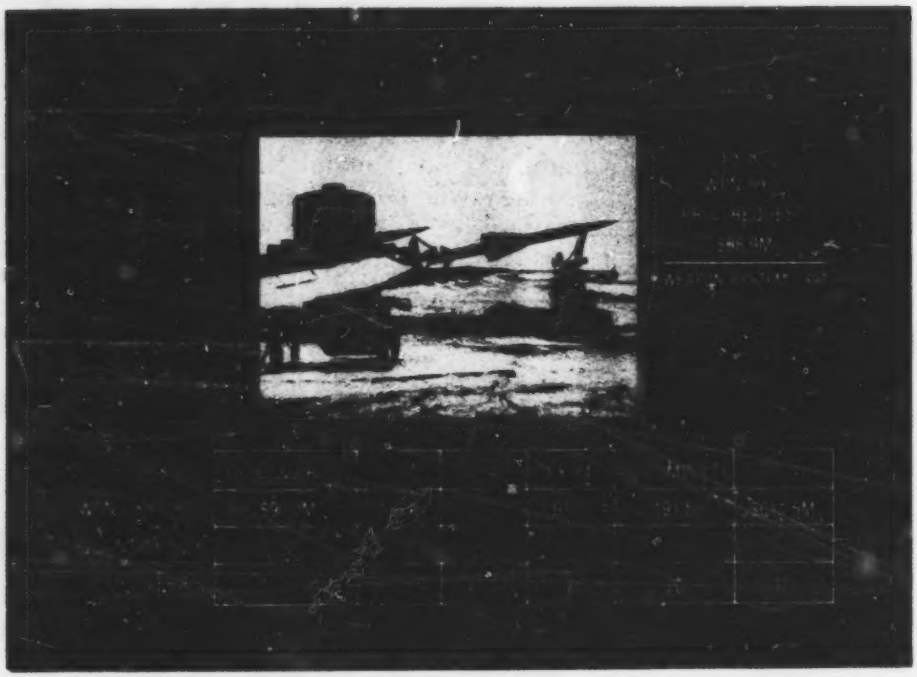


Here is a shot of the F-16 firing one of the missiles. While there is no procurement money this year, I felt we needed to discuss that to fill out the whole air-to-air picture, to show you where we are going.

The last part of what I call my antiaircraft missiles is the Rapier, the short-range surface-to-air missile. We are procuring them to provide point defense for our bases in the United Kingdom.

RAPIER
• SHORT RANGE SURFACE TO AIR MISSILE
• POINT DEFENSE OF US AIR BASES IN UNITED KINGDOM
• PROCURE 28 OPERATIONAL AND 4 TRAINING UNITS
• FIRST DELIVERY MAY 83

We have a memorandum of understanding with the United Kingdom to procure a total of 32 units; 28 of them will be operational and 4 will be for training. We expect to deliver the first units in May 1983. In 1983 we are requesting $98.9 million.



The quantity buy is all in 1 year because, as you know, Congress last year authorized us the total amount in the first year to be incrementally funded.

Mrs. BYRON. Let me ask you a question on that. The Army has canceled their Roland program. We are left in the unlucky position of funding Rapier missiles for short-range air defense in the United Kingdom. We don't seem to have comparable defense for our bases on the continent. Does this concern you somewhat?

General BURKE. Yes, ma'am, it does. In fact, we have a study effort underway in the Pentagon right now, the Air Force and the Army, jointly. We just had a session with the head of the RAF regiment, and did this sort of thing for them.

One of the things we are looking at is expanding the use of Rapier to the continent. Also, we are in discussion with the Army as to what the rights and roles and missions are. It is a problem. I hope we can get it solved in 1 month or 2 and move out, because we have not done everything we need to do in this area.

Mrs. BYRON. If the decision is not made soon, I think we will end up with a problem. Would you all support the extension of the program to cover the continent if we elected to do so?

General BURKE. Certainly if Congress directs us to do it, we would support it. I don't think there would be any reluctance in implementing in that direction.

Mrs. BYRON. I think the priority is there for that.

Mr. WHITE. Last year in the October timeframe the Rapier program in 1982 was cut back in that budget amendment to $110 million. At that point in time you were planning in fiscal year 1983, to spend $143 million on this program. Congress did not go along with the 1982 cut. It was restored back to the $139 million level. I noticed the 1983 program is still down at the $98.9 million level rather than the $143 million, which you were planning. What impact does that have on the program?

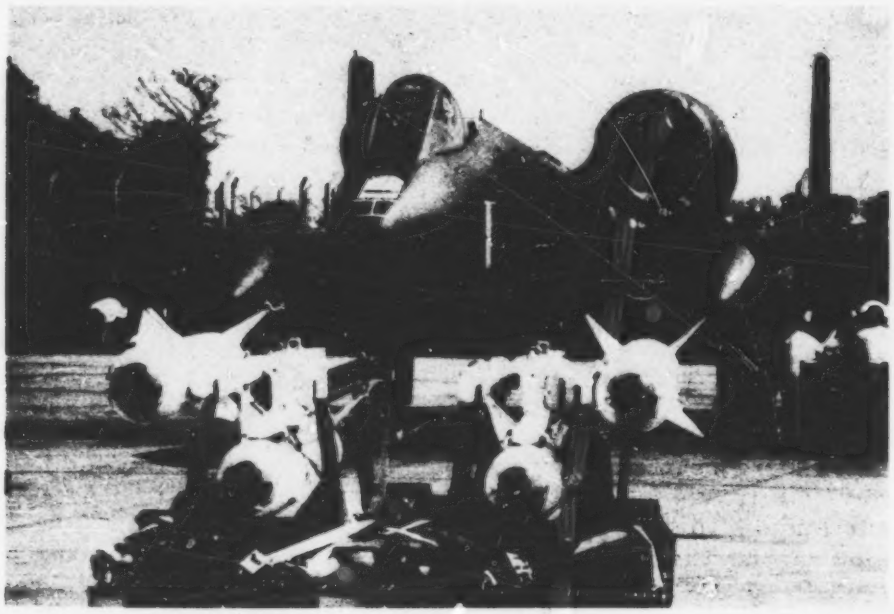
General RUSS. We are attempting to get back to the original schedule. With the profiles we have up there, we will be within 4 months of the original schedule. That is about the best we could do after the fiscal year 1982 money was added back. By that time we also had adjusted this schedule. We analyzed how we can do best in 1984 and out to complete, and we adjusted the out years and were able to do it within 4 months of the original schedule.

Mr. WHITE. Do you see a great perturbation in the program by reducing it from 143 to 98?

General RUSS. No; I don't think so. I think it will be fine.

What makes this work is Congress very wisely let us commit to the 32 units at the outset.

I would like to move to air-to-surface weapons.



• STANDOFF AIR TO SURFACE MISSILE
• TYPES TV, INFRARED AND LASER GUIDED
• COMPATIBLE WITH A-7, A-10, F-4, F-16 & F-111
• INITIAL PRODUCTION OF IR VERSION STARTS IN FY 82

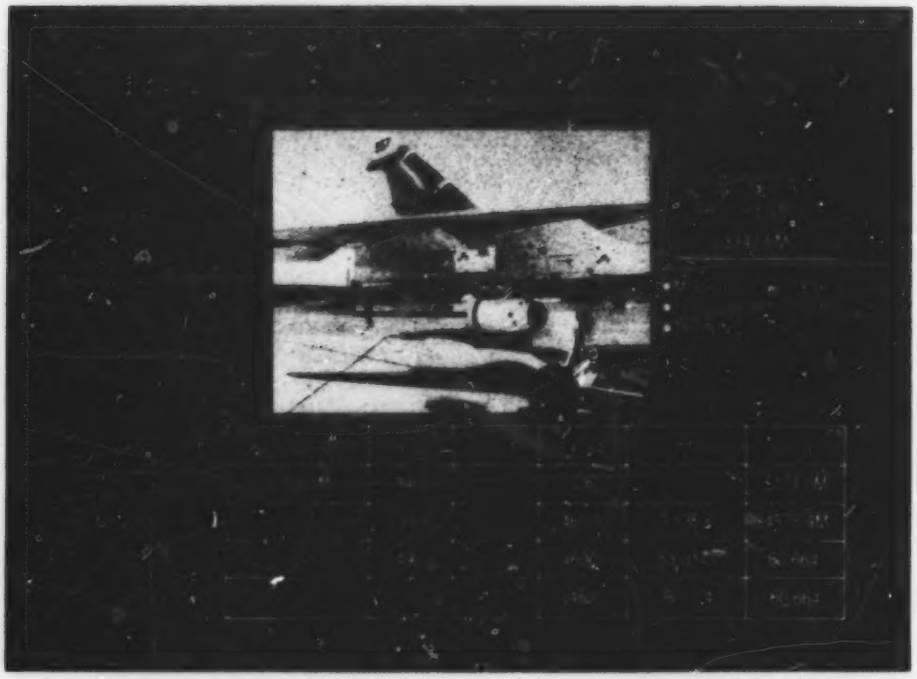
We will start off with a look at the Maverick missile. It is a standoff air-to-surface missile that we use on a variety of airplanes—A-7's A-10's, of course, F-16's, F-111's. It comes in three versions—the TV version, laser version, and the infrared version.

We have about 19,000 of the TV version in the inventory.

The laser version is being procured for the Marine Corps and the Air Force is embarking on the infrared version.

We had scheduled a production decision in fiscal year 1982. We have run into some problems with the missile. The problems primarily revolve around reliability and maintainability things.

In our operational test and evaluation we fired 15 missiles. Of those 15 missiles, 11 of them were successful, 4 of them had problems, 1 of them had a software coding problem, another one had a G-bias problem, and the remaining 2 had the same melted solder joint connection problem, but all those problems have been corrected.



What gives us a problem though is the reliability and maintainability, the mean time between failures is higher than we would like. Therefore, we think it is prudent not to embark on a high production ramp-up the way we have it here. We would have started with 490, ramping up and going to full rate production by 1984.

We have made the decision to cut that to 200 in the first year. With that 200 we will go out and do some more testing to verify reliability and maintainability improvements. We don't want to put a missile in the inventory that drags along a maintenance tail with it.

Mrs. HOLT. How are we going to justify the $342.6 million in 1983?

General RUSS. Let me say that with a reduction in ramp up to 200 missiles, that figure will come down. We currently have gone out to Hughes Aircraft and said we are going to go for a different number of missiles and therefore we will need a different price.

What I am telling you is that it is more money than we need and we will have to come back to you and tell you what the new funding requirement is.

Mrs. HOLT. You are not asking for authorization?

General RUSS. No, ma'am.

General BURKE. If we were putting the budget together today, we certainly would have a different number. We will give you our best estimate of that before you do your markup.

Mr. BADHAM. Can you set to rest some of the horror stories? Of all people in Congress, I hate to bring up something that I read in the Washington Post, believe me, but if the missile operates perfectly but the pilot can't lock on or it breaks lock or something like that, then you have a dumb bird. What about all these things

about not being able to acquire the target, shooting at hot rocks and so forth, instead of tanks, and it breaks lock and all of these things, the use of high technology on something, with which high technology the bird doesn't know what it is supposed to do?

General BURKE. Let me comment a bit about that. If I may, I will provide you for the record our assessment of that Washington Post series which I thought was creative journalism at its most imaginative. I knew they were going to do the article. I was amazed they were able to squeeze it into three separate stories. It is worth a minute just to review the history of the Maverick program.

In 1970 we put together the first Maverick which is basically what we have now, except it had a TV as the sensor. We knew full well that TV did not work well at night, in clouds, dust, smoke, and so forth. We were not smart enough in 1970 to build an infrared sensor or we would have.

So, a lot of the Washington Post article was talking about that. They said that the early missile did not work under those conditions. We knew that. That is why we are going to the IR design. Then they mixed in a lot of early test data from 1970 and pointed out, naturally, all the failures that they could document.

Mr. BADHAM. This is 1970?

General BURKE. 1970; yes. We did have some problems during the development program, but progressed past that point. I think probably the best proof of the pudding is our operational experience with the TV version of the Maverick, which has been quite good. They first saw combat in 1973 when they were delivered to the Israelis during that war. The Israelis fired 50 of them in actual combat conditions with very little chance to get acquainted with the missile or train with it, and had 47 hits. They were ecstatic over its performance.

The Egyptians were, I think, equally unhappy over that.

The Iranians have some of those Mavericks. Our best estimate is that they have fired 12 and hit 12 Iraqi targets with them in actual combat. So, where you have good visibility that seems to be working quite well, although no one would have derived it from the article. It won't work in a lot of conditions that you would typically find in Europe, so we set about developing an infrared system that would see at night and through smoke and haze. That program had its fair share of developmental problems and early test results were not good.

We did have problems that were cited, of mistaking hot rocks or trees for tanks. We made a major redesign of the missile and basically we converted it from an analog system to digital system.

Since then, that seeker has worked quite well and the tests are most encouraging, although you can, again, pull out all the failures and focus on them and make a pretty grim story.

But of the actual 15 firings of this improved, version, under stringent conditions, 11 were complete successes. Two of the failures, as General Russ indicated, were failures of a soldered joint. We should have been smart enough to anticipate this, but we weren't. The infrared version flies a different profile than the TV version resulting in overheating that solder joint.

Mr. BADHAM. What is the range?

General BURKE. 15,000 feet and beyond. In addition, we had one software error that was easily corrected, and a test circuit that failed causing incorrect biasing. I would say that is a pretty good looking test program at this point. Again, we are not satisfied with the reliability and failure rate of it, but that is something that we will correct before we go into production.

Mr. WHITE. You talked about 11 successes out of 15 shots, an 11 to 4 record. How does the picture look in the last five shots?

General BURKE. It is bad.

Mr. WHITE. The failures are in the more recent shots?

General BURKE. That is right.

Mr. WHITE. That is what the criticism was about?

General BURKE. Yes; again, that was part of our motivation to slow it down. We do understand the solder problem and that accounts for two. We do understand the software problem, and that accounts for the third and we do understand the biasing problem.

[The following information was received for the record:]

MAVERICK

In general, the Washington Post article confused IR and TV Maverick capabilities; DT&E and IOT&E testing; and Engineering Development Model and Full-Scale Development Model test results. The following addresses specific points in the Washington Post articles.

Allegation: Maverick test conditions are unrealistic.

Discussion: Early Maverick developmental testing was structured to reduce the number of variables. As testing progressed through DT&E more complexity was added. For example, test firings under extreme target conditions, or corner of the launch envelope firings, and eventually worst case environmental conditions were added. IOT&E added: realistic natural background, battlefield clutter and typical meteorological conditions with realistic targets and tactics to obtain operationally significant testing. Environmental test conditions ranged from hot and humid at Eglin AFB. FL to snow background at Ft. Drum, NY. Realistic battlefield clutter such as disabled vehicles, and burning hulks, countermeasures and smoke camouflage was used to simulate expected conditions.

Allegation: Training sorties are not scored for test purposes.

Discussion: Training missions are flown to acquaint pilots with the IR Maverick System. Many times no tactical targets are provided and the pilot uses targets of opportunity (e.g., cars). During these sorties pilots learn the equipment (primarily the switchology). Data from these flights would not provide meaningful system performance information.

Allegation: Maverick test scenarios are unrealistic.

Discussion: IOT&E targets used included tanks, APCs, howitzers and radar vans. Target deployment scenarios were developed by the Army and employ Soviet tactics. Pilots were given only the kinds of prior information available during actual combat operations. Aircraft were flown using operational profiles. Both targets and attacking aircraft used available terrain as realistically as possible.

Allegation: Pilots learn test area.

Discussion: Performance improves with repeated passes as pilots learn the test area; however, during actual operations pilots will be flying repeated missions over the same general area and be able to improve effectiveness as they learn the terrain and enemy positions.

Allegation: Maverick experienced poor test results during testing at Ft. Polk.

Discussion: IR Maverick developmental testing was conducted at Ft. Polk and in Germany. Advanced development models were used during these tests. Significant improvements were made during full-scale development and missiles employed during the later tests at Ft. Riley and Ft. Drum had these improvements. Specifically, the tracker and signal processing was upgraded from analog to digital, and the stabilization and focus compensation was converted from a mechanical to electrical system. Results showed definite improvement during the later testing. Lock-on to rocks and bushes was never a significant problem at Ft. Polk or in Germany; however, maintaining lock after acquisition was a problem. The development changes greatly improved IR Maverick tracking performance. The first firing of the im-

proved IR Maverick was a direct hit at night against an inoperative tank hulk (typical cold target). Lock-on and track was obtained beyond 5 nautical miles. Subsequent hits were scored against moving and maneuvering tanks, against targets in a high clutter background, and minimum size targets. Launch ranges have varied from a direct hit at a minimum range with maximum offset to a direct hit from over 12 nautical miles range against a large target. Launch velocities and altitudes have been operationally realistic with firings from four types of aircraft (F-4, A-10, A-7 and F-16). IR Maverick has successfully coped with flares, bonfires, burning hulks and more exotic attempts to confuse or countermeasure IR guidance. Tank muzzle flashes as well as flares launched from the target tank caused the IR tracker to break lock. However, these events must occur within the critical seconds from launch to impact. Otherwise no effect will occur.

Allegation: Most recent (Oct.–Jan.) testing resulted in two failures and one aborted mission.

Discussion: Fifteen missiles have been launched (12 DT&E and 3 IOT&E) and over 240 captive operating hours flown with the IR Maverick from December 1980 to December 1981. Of missiles launched, 11 scored direct hits on targets and four missed. Two of the four failures occurred during the Oct. 81–Jan. 82 time period. Only one of the four misses was due to the IR guidance and that was due to an error in software coding. Two misses were caused by failure of actuator wiring and the other by accidental grounding of the g-bias signal. All failures have been identified and fixed. Except for the g-bias, all fixes have been verified by test.

Allegation: Pilot must find the target before acquisition.

Discussion: IR Maverick is not a target identification system. The IR system, pilot visual information, and forward air controller inputs are combined to find targets. Pilots use the same basic techniques to deliver any tactical air-to-surface weapon (Rockeye, bombs, or gunfire). In this technique the pilot processes available information such as target, threat, terrain, weather, and weapons capabilities and then backs off from the target the appropriate distance to maximize standoff and survivability and the unique weapons capabilities. The pilot using the cockpit display places tracking gates on the target, presses the launch button, and the missile homes autonomously on the target image until impact.

Allegation: Maverick can not distinguish friendly tanks from enemy tanks.

Discussion: The IR Maverick is not a device that can identify friendly tanks from enemy tanks. No such device exists. The Maverick missile homes on the target it was locked on. The target may be a bunker, small ship, or tank. The pilot has the task of selecting the target rather than the expendable missile.

Allegation: TV Maverick was a failure in Vietnam.

Discussion: The TV Maverick was introduced into Vietnam late in the conflict. It was used against tanks, bunkers and trucks. Seventeen Mavericks were launched with 12 hits. Three of the five misses were due to crew error.

Israel used the TV Maverick in combat with 47 targets hit out of 50 Mavericks launched.

Iran used the Maverick against a column of tanks and scored 12 hits out of the 12 launches.

There are currently eight countries buying TV Mavericks most of which have conducted their own test programs.

Allegation: TV Maverick does not work in fog, rain and darkness.

Discussion: The TV Maverick was never designed to work in darknesses, fog or rain. The TV tracker relies on ambient light to establish a contrast between target and background. The IR Maverick will greatly improve effectiveness under these conditions.

Mrs. BYRON. Where are we as far as the laser Maverick is concerned?

General BURKE. That is being developed for the Marine Corps and so far as I know coming along very well.

General RUSS. Yes, it is coming along quite well.

Mrs. BYRON. Since we are having problems with this missile, what is the possibility, if the problems are not rectified, of eliminating this one step and going to the laser?

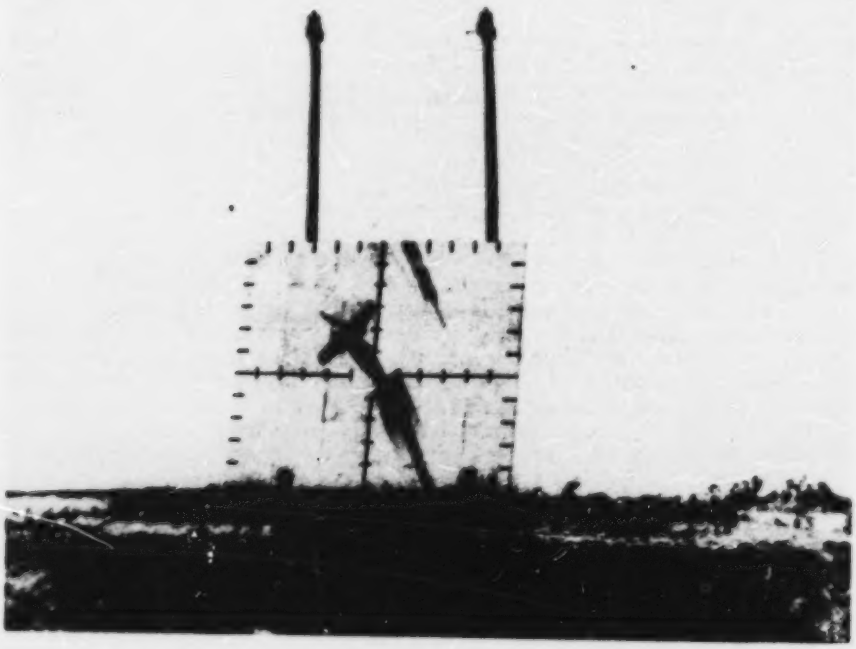
General BURKE. We could, but we really have rectified those problems. What we have not done is proven we have rectified them.

Mrs. BYRON. We have had 15 tests and of the last 5, 4 of them were where the problems were?

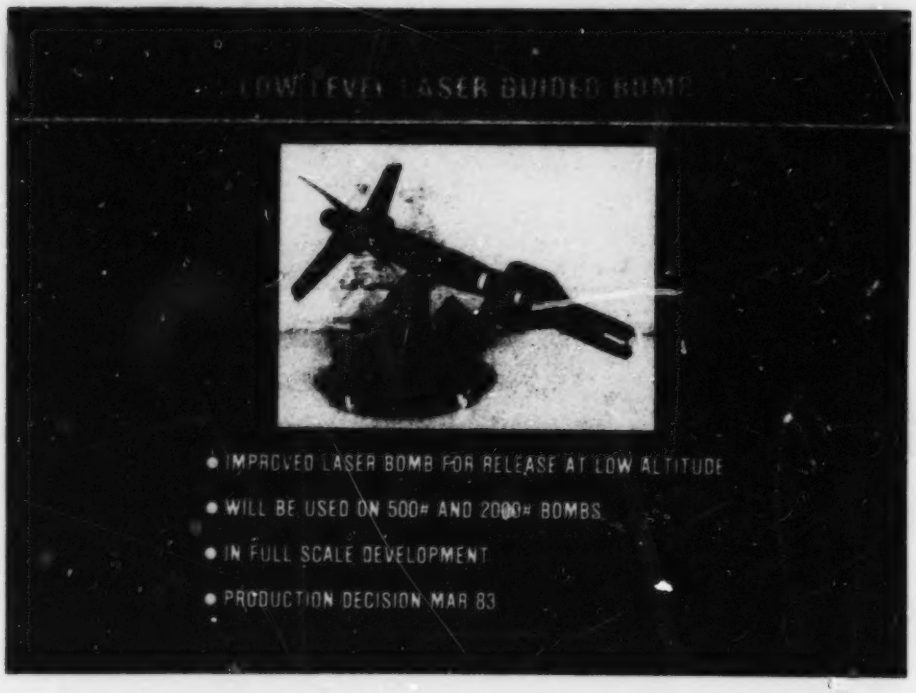
General BURKE. Three of the last five. Again, we understand what happened. That is fixed. In order to commit to the program we have to demonstrate that it is fixed, and we have not done that yet.

Mrs. BYRON. Is that moving along fairly well?

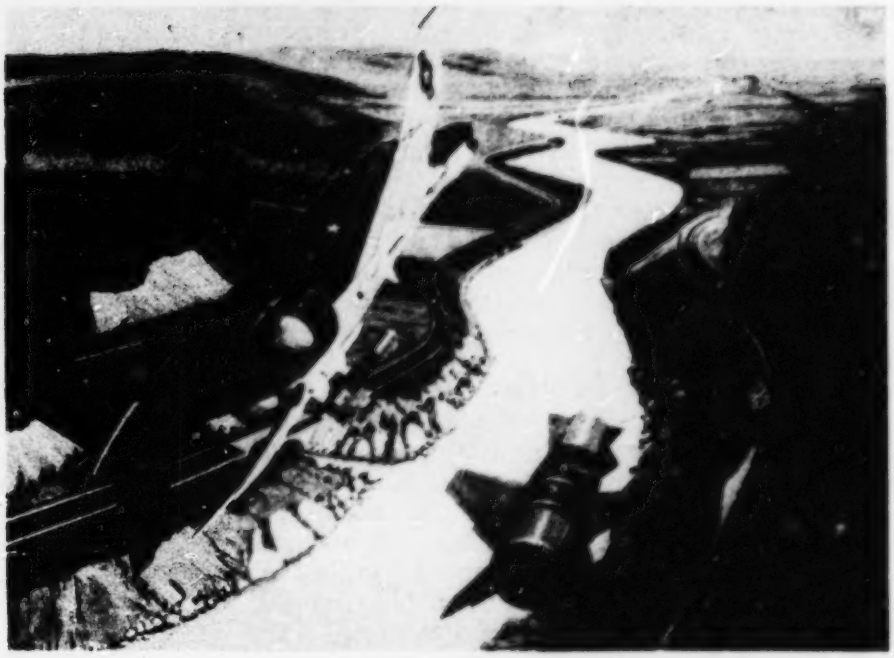
General BURKE. Yes. We thought it was prudent to say let us slow down a bit and assure ourselves that we are right on this, and we have it.



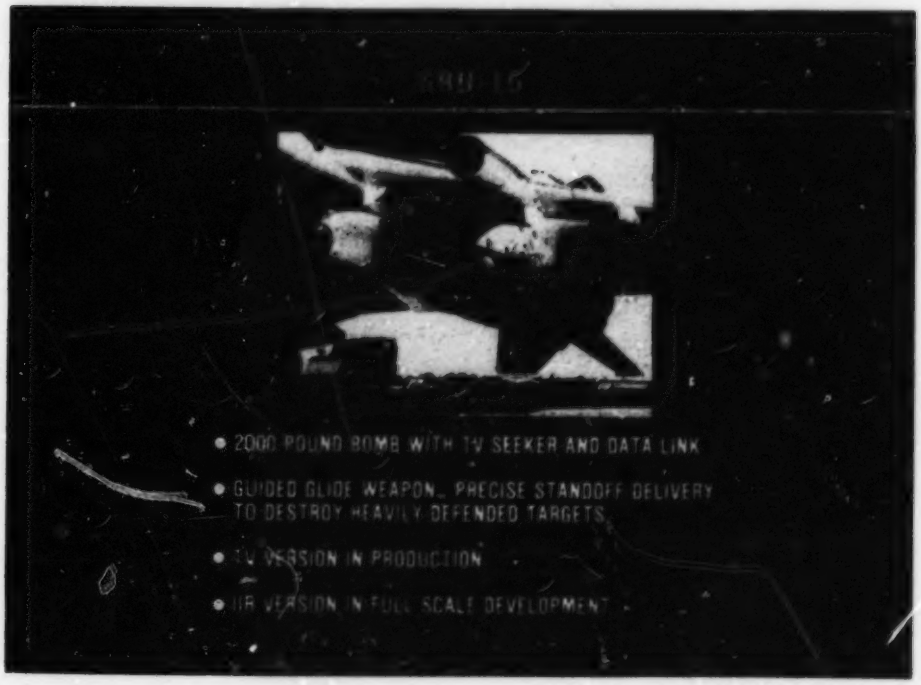
General Russ. The next weapon is the low-level laser guided bomb [LLLGB]. We procure the kits, tail fin and nose, and put them on 500- and 2,000-pound bombs. This is a demonstration shot of one of them. This is a target. We have demonstrated average miss distances of [deleted] in a series of tests. It is an excellent weapon. We will make a production decision in March of next year.


LOW LEVEL LASER GUIDED BOMB
• IMPROVED LASER BOMB FOR RELEASE AT LOW ALTITUDE
• WILL BE USED ON 500# AND 2000# BOMBS
• IN FULL SCALE DEVELOPMENT
• PRODUCTION DECISION MAR 83

We are requesting $106.9 million to start procurement of 2,000 of these. As you know, with the current laser-guided bombs you have to get to a higher altitude to drop them; you can't drop them from low altitude. This one you can come in at low altitude and drop [deleted] from the target and it will fly up to the target.



Another bomb that we have for a high value target is what we call the GBU–15. It is a 2,000-pound bomb; it has a set of wings on it out here and it has a TV head on it similar to the one that is on the Maverick.


GBU-15
• 2000 POUND BOMB WITH TV SEEKER AND DATA LINK
• GUIDED GLIDE WEAPON_ PRECISE STANDOFF DELIVERY TO DESTROY HEAVILY DEFENDED TARGETS
• TV VERSION IN PRODUCTION
• IIR VERSION IN FULL SCALE DEVELOPMENT

Again, the concept shown here is an F-4 dropping one of these against a bridge type of target. It releases it [deleted] back; as it goes there is a data link in this weapon that comes back to the airplane, tells the airplane what it is seeing; the operator can look and see what the picture is. He can update it if he wants and he can change the flight of the bomb, or if it is on target he can let it go and it does not make any difference.

We are very pleased with the development of this weapon. The TV version is in production. The infrared version uses the IR head of the Maverick missile so that we can drop it at night.

Mr. BADHAM. They don't have any propulsion?

General RUSS. It takes the momentum from the airplane. You just drop it. These things are high lift devices and it glides up to the target.

Mr. MCCURDY. It is not all weather, is it?

General RUSS. The TV version is not; that is why we would like to get an I2R version. It can be programed to go a certain distance and go through weather, but when it comes out the other side it has to have sufficient time to pick up the target and lock on it.

Mrs. HOLT. Mr. Chairman, may I interrupt for a moment and make a motion that the chairman be authorized to go into executive session for 1 subsequent day of hearings for the purpose of receiving national security information?

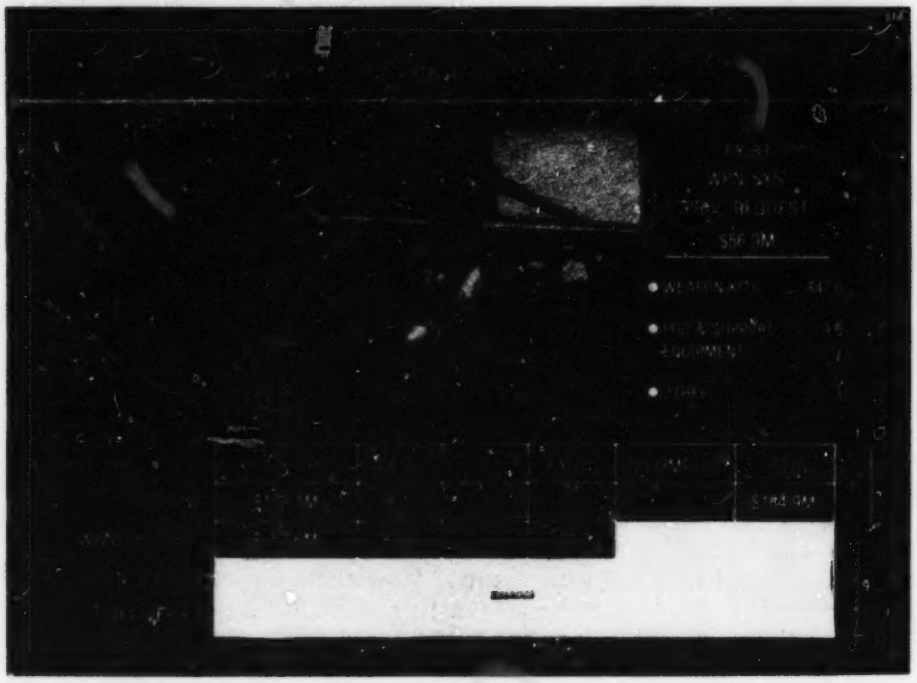
Mr. STRATTON. Under the rules, the Clerk will have to call the role on that.

Mr. WHITE. Mr. Stratton.
Mr. STRATTON. Aye.
Mr. WHITE. Mrs. Holt.
Mrs. HOLT. Aye.
Mr. WHITE. Mrs. Byron.
Mrs. BYRON. Aye.
Mr. WHITE. Mr. Hillis.
[No repsonse.]
Mr. WHITE. Mr. Mavroules.
[No repsonse.]
Mr. WHITE. Mr. Badham.
Mr. BADHAM. Aye.
Mr. WHITE. Mr. Leath.
Mr. LEATH. Aye.
Mr. WHITE. Mr. Courter.
Mr. COURTER. Aye.
Mr. WHITE. Mr. McCurdy.
Mr. MCCURDY. Aye.
Mr. WHITE. Mr. Kramer.
[No response.]
Mr. WHITE. Mr. Hertel.
[No response.]
Mr. WHITE. Mr. Hunter.
[No response.]
Mr. WHITE. Mr. Price.
Mr. PRICE. Aye.
Mr. WHITE. Mr. Bennett.
[No response.]

Mr. WHITE. Mr. Chairman, on that vote there are eight ayes and no noes.

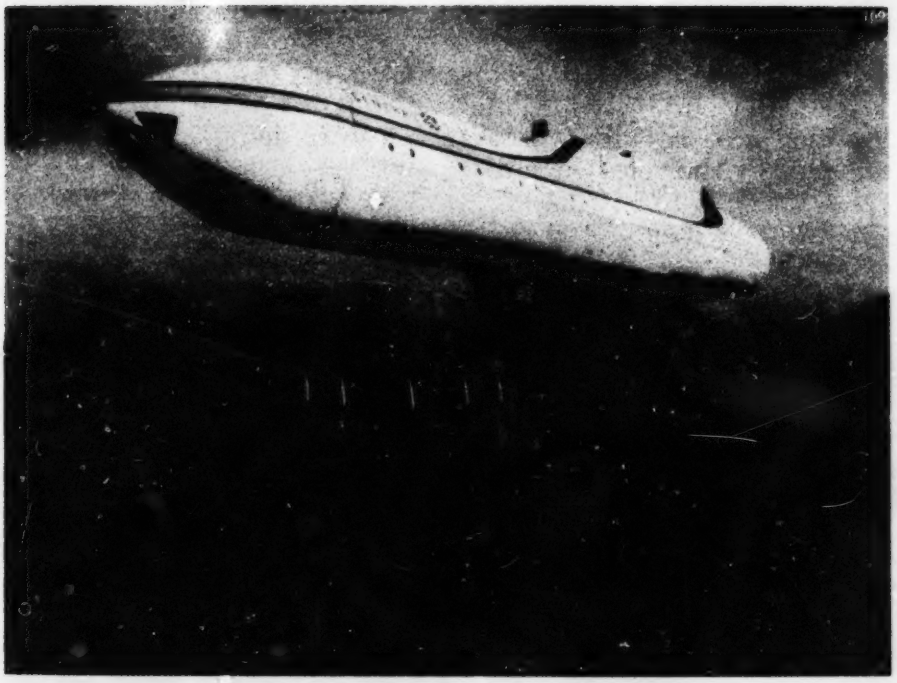
Mr. STRATTON. The motion is agreed to and the Chair will bank that particular authority for later use.

You may proceed with whatever you were doing when we were interrupted by the vote, General.



General RUSS. We were discussing the GBU-15 glide bomb.

I was saying that in 1983 we are asking for $56.9 million to procure 250 of these weapons. Our ultimate objective is approximately 2,400 of them. About half of them will be the TV version and the other half the infrared version.

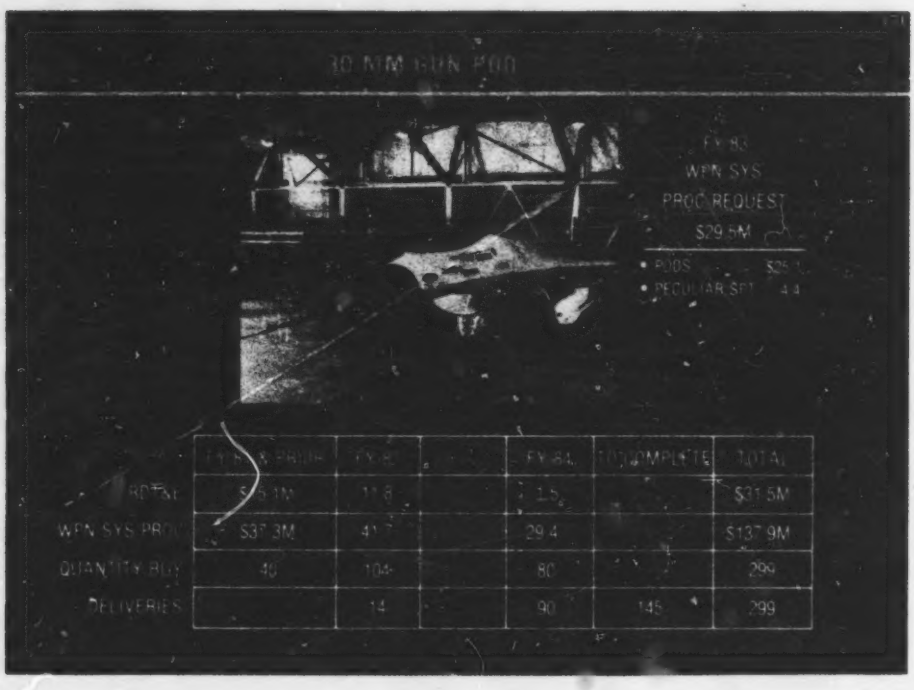


Another effort we have ongoing and which we are currently procuring is the 30-millimeter gun pod. This shows the size of the pod versus the 30-millimeter gun ammo. It will hang on the F–4, A–7, and the F–16. It is a four-barrel Gatling gun; it fires the same am-

• SIMPLE STRAP ON ANTI ARMOR CAPABILITY FOR F-4, A-7 & F-16
• FOUR BARREL GATLING GUN - FIRES A-10 AMMO
• CONTRACT AWARDED JULY 1980
• IOC CY 82

munition as on the A-10. We have awarded the contract and we expect an IOC this year.

The first pods will go to the RDF force—F-4's—at Moody Air Force Base, Ga.



In 1983 we are asking for $29.5 million to buy 75 pods. Overall we are talking just a little under 300 pods. We may increase that later on for the F-16. Right now we are having some problems with the gun on the F-16. It works fine on the F-4 and works fine on the A-7.

Mr. McCURDY. The F-16 has a gun on it already.

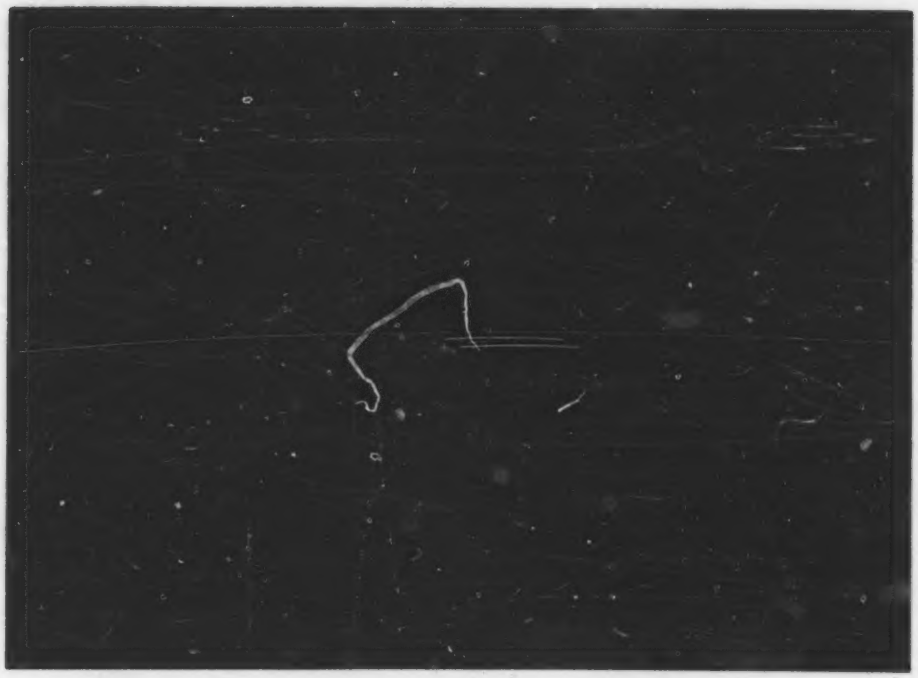
General RUSS. It has a 20-millimeter gun, as do all the other fighters. To kill tanks you really need a slug about that size [indicating].

Mr. McCURDY. How big is that?

General RUSS. Thirty millimeter, that tall and that big around [indicating].

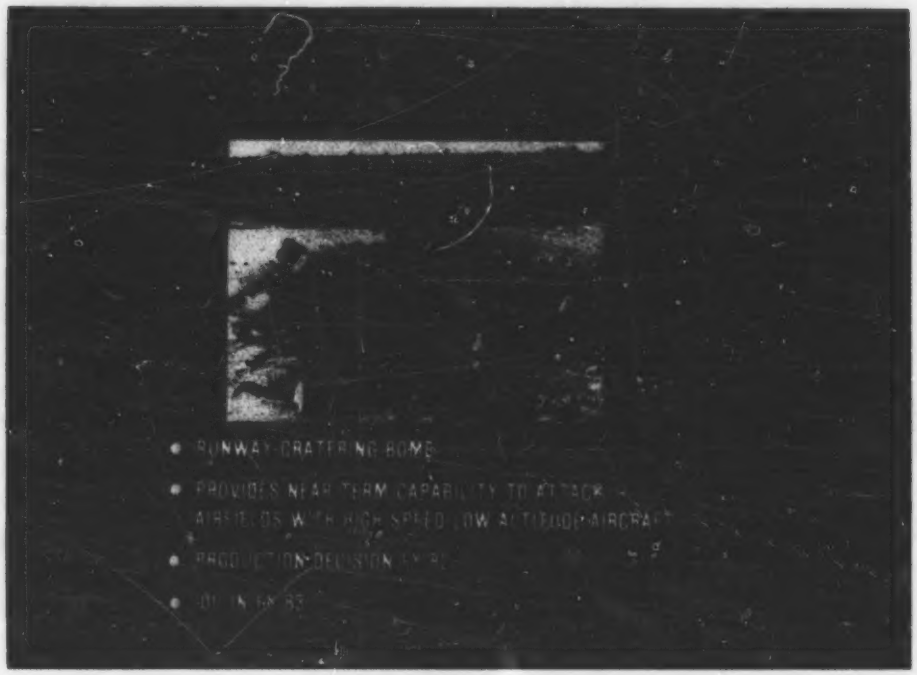
Mr. McCURDY. What is the price on that?

General RUSS. $393 K. unit price for the 75 pod buy in fiscal year 1983.



The next panel is the Durandal. Let me go through the sequence first:

An airplane comes across the runway about [deleted] feet, about [deleted] knots. The weapons come off the airplane; the pilot chute



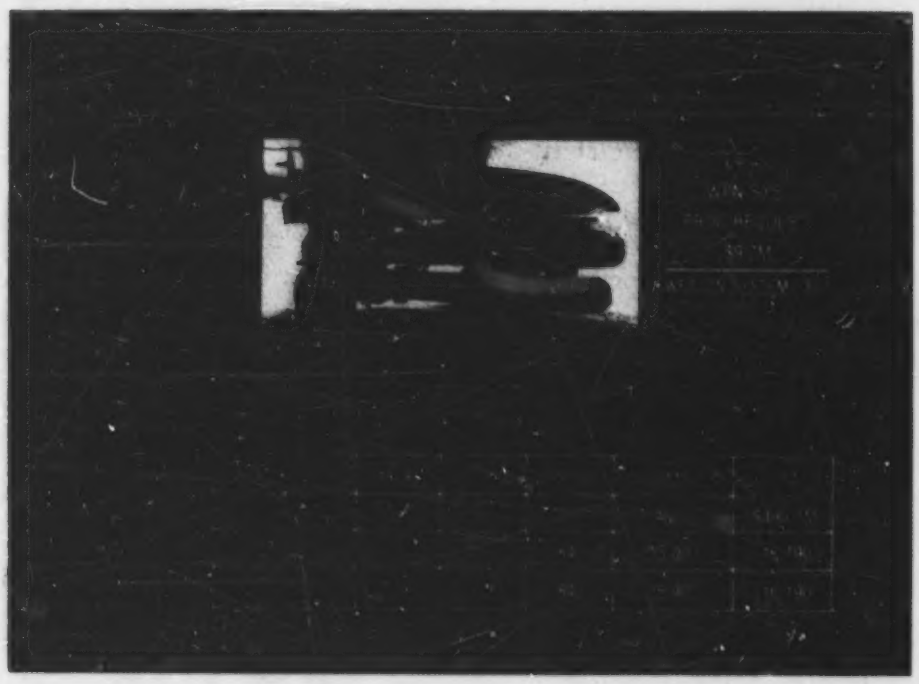
comes out, then a full chute comes out; it penetrates, goes through the runway and then it blows up, makes a hole about this big [indicating]. This is the one that we have tested. It is about 15 feet across. It heaves about 20 feet and is 3 to 4 feet deep.

We are very interested in this weapon because we can buy it today; it is in production; it is a French weapon but it is in production and we can buy it. Right now we have no capability—when I say no, that is an overstatement to some extent but almost no capability—to bomb runways and knock out runways.

Mr. McCURDY. There is a cruise missile that has bomblets that come out and do the same thing. What is that called?

General RUSS. No, that is the MRASM, medium-range air-to-surface missile. That is currently in development. We are not looking for that until 1986 at the best. We are having problems with the submunitions in that at the current time. The reason this works so well is because it is big. It is about the size of a 500-pound bomb and therefore it goes through and blows one big hole. The submunitions that are developed for MRASM are small, about the size of a small whiskey bottle. They have to go through and do the same sort of damage, so they make a lot of little holes. This makes one great big one.

Mr. McCURDY. What carries this?



General RUSS. This is carried on the F-111, on the F-16, on the F-4; it has been certified on the F-111 and F-4 and fit checked on the F-16.

Mr. WHITE. This was the successor or stopgap measure when JP-233 was terminated?

General RUSS. Yes.

Mr. WHITE. It gives you a near-term capability until MRASM proves out and comes onboard?

General BURKE. Yes.

Mr. WHITE. With existing liability that a pilot has to fly over and expose his warm body?

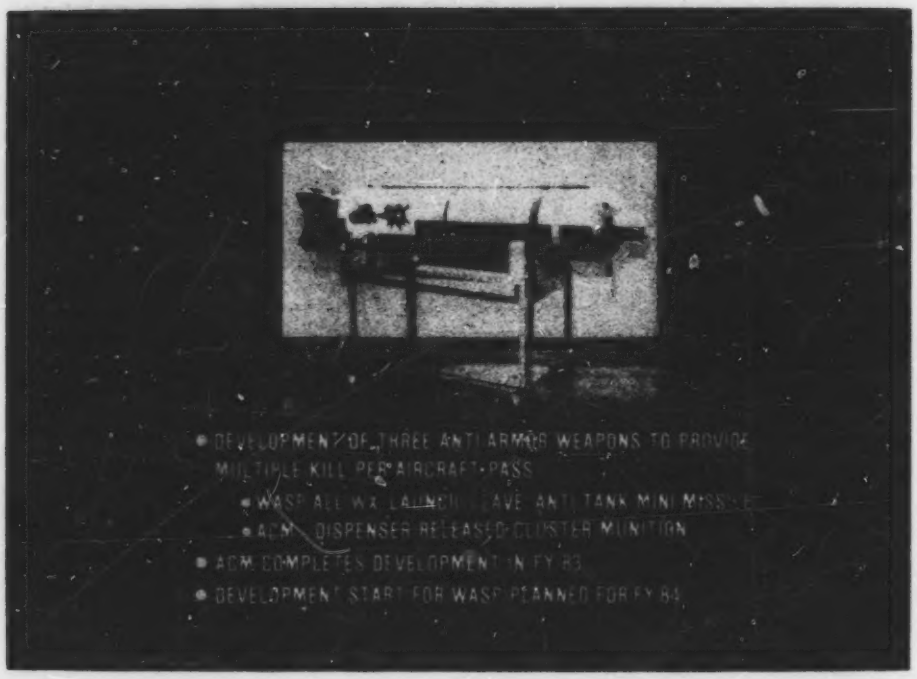
General BURKE. Yes. Even with MRASM you would still want the mix, because this will obviously be a lot less expensive. If you were in an engagement in which the airfields were undefended or relatively so, you could use this less expensive munition. Even in a war in Central Europe one could use MRASM during the early stage of the war when attrition were the highest and then shift to the lower-cost munitions as control of the air was attained.

Mr. WHITE. Is this a cluster bomb; does it make one big hole per bomb?

General RUSS. It comes out of this canister. What happens is that it pulls out of the canister; it floats down and then it fires. Once it gets pointed down at a 45 degree angle then it has a little motor on it that fires, rocket motor, and it fires the charge through the cement. It has a delayed fuse on it. Once it gets underneath the runway, then it blows up.

Mr. COURTER. What is the purpose of the parachute?

General RUSS. The parachute gets it pointed down; otherwise if you dropped that at [deleted] knots the first thing it will do, as I have dropped a lot of them when the chutes didn't work, not on this one, the first thing you do when you roll up it flies formation with you and that gets a little disconcerting. It points the nose down and gets it at the right angle.


• DEVELOPMENT OF THREE ANTI ARMOR WEAPONS TO PROVIDE
MULTIPLE KILL PER AIRCRAFT PASS
• WASP AIR VX LAUNCH HAVE ANTI TANK MINI MISSILE
• ACM DISPENSER RELEASED CLUSTER MUNITION
• ACM COMPLETES DEVELOPMENT IN FY 83
• DEVELOPMENT START FOR WASP PLANNED FOR FY 84

Another type of munition that we are currently testing and hope to go into production on is what we call our wide area antiarmor munitions. This is the antiarmor cluster munition and this is the WASP, which is a little minimissile. This is a little missile that fits in a pod, flies out; it has a seeker on it, finds a target and kills it so that you don't have to fly over the tank.

This is a munition that floats down on a parachute. It has an extendable probe and the warheads are as shown. When the probe hits the ground it sets off the warheads which go in directions like this, three different ways. If a submunition happens to hit the tank, another warhead fires down. The slugs are sent out at very high speeds. It will go through anything in the line of the slug.

These are carried in a dispenser which is our tactical munitions dispenser. It is a standard dispenser we are producing for all our cluster and smart-type weapons that we are going to put in a standard dispenser so that we will buy only one dispenser and everybody has to design to fit into that.

We should complete the development in the ACM in 1983. We have run into one problem right now, so we have slowed down the program in the ACM. The best way to explain it is when one submunition hits and goes off it causes a blast effect on a neighboring submunitions parachute. What that does with the air tends to tilt that parachute. If it tilts the parachute, the submunition hits at a little bit of an angle and the warhead slug goes into the ground and the other slug may fly over the target.

We are trying now to see how to counteract it. It may be a slotted chute.

Mr. McCURDY. Is this still in development?

General RUSS. In the sides and in the tracks. This is about that far off the ground [indicating]; it hits the tank about that far up.

Mr. WHITE. What kind of tanks have you shot at?

General RUSS. I don't know which ones.

Mr. WHITE. Could you give us a synopsis of the test results, telling us what the penetration capabilities are against the various kinds of armor?

General RUSS. I will be glad to provide you the types and results of the tests. We generally use Army tanks because we don't have enough captured tanks to shoot at. We use old Army tanks, then we make an analysis.

[The following information was received for the record:]

A-10 PENETRATION

The A-10 has fired 30mm ammunition against the U.S. M-47 tank and the Soviet T-55 and T-62 tanks.

The armor penetration of the 30mm Armor Piercing Incendiary (API) round when fired from the GAU-8A cannon in the A-10 is a function of aircraft velocity, slant range, impact angle, and target hardness. Penetration is usually described in inches of rolled homogeneous armor plate (RHAP). The vulnerability, i.e., probability of kill, of a target tank to the GAU-8 cannon is also dependent upon the attack aspect angle, the gun dispersion and aiming error.

The performance specification for the A-10 aircraft, created in the early seventies, is to penetrate [deleted] of RHAP at 4,000 ft slant range at a 30° dive angle with an aircraft velocity of 250 KIAS, which corresponds to a rear quadrant attack on a [deleted]. The A-10 has demonstrated that it meets or exceeds this requirement.

Mr. WHITE. What is the lethal range?

General RUSS. I think about 100, 150 yards, something like that. You have a significant number of them coming down in a pod. You have 48 of these in one pod that come down. They fill an area that is about half the size of a football field, something like that. Anything that is anywhere in that area will have a tough time.

Mrs. HOLT. Why do we put money in procurement when we are still working on it?

General RUSS. That is what I brought up. We had intended to make a production decision in 1983 and buy these. What I am telling you is that we have stopped some of the work on it right now because we have the mutual blast interference problem. We fully expect to have that solved. I would be less than honest with you if I told you we have that solved.

Mr. MCCURDY. Are there procurement moneys in the budget this year?

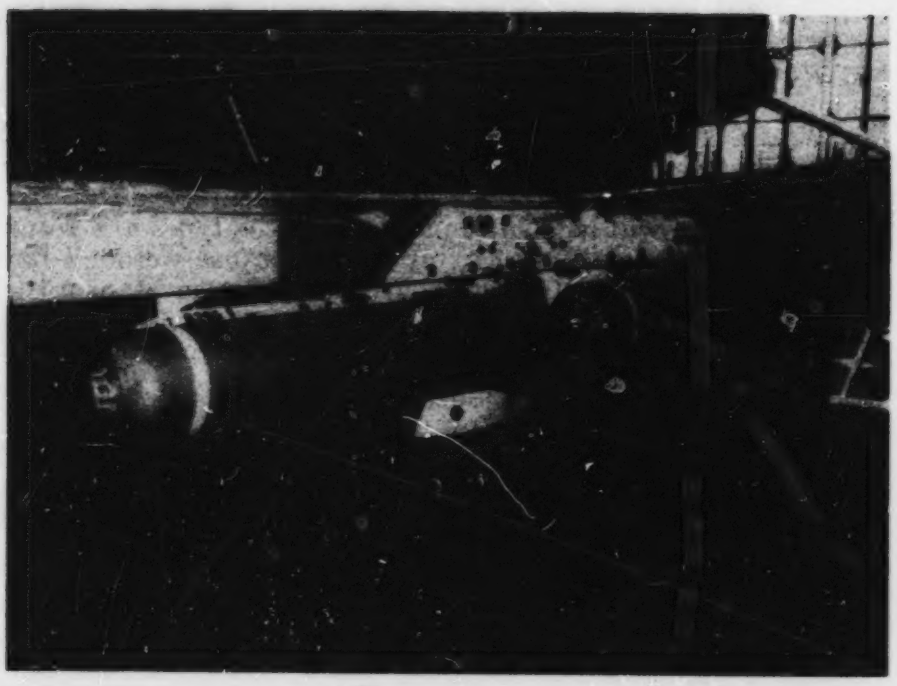
General RUSS. Yes.

Mrs. BYRON. You are having problems with three different systems, yet you have procurement funds in the budget this year?

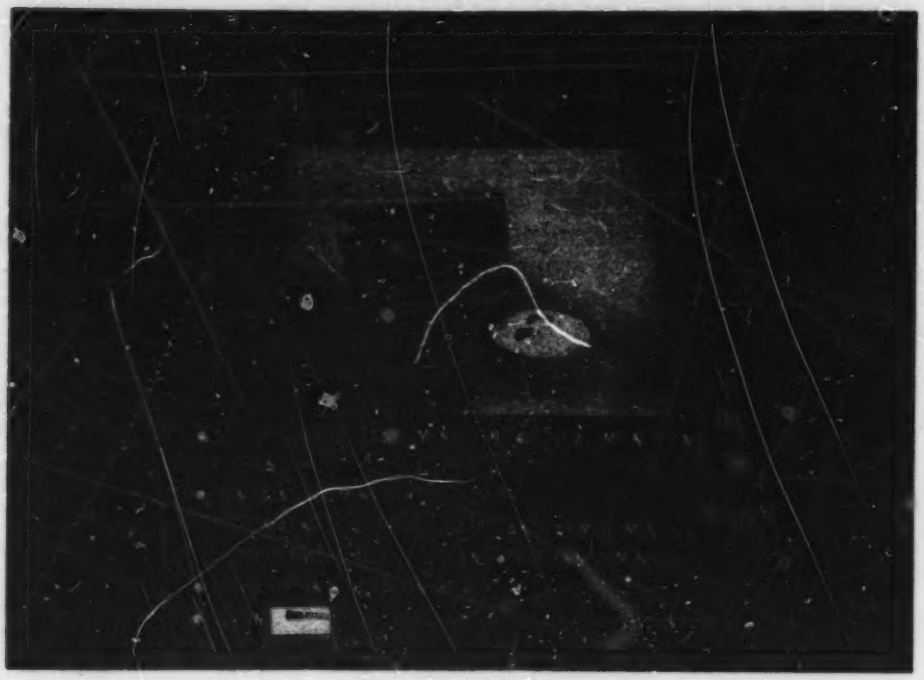
Mr. WHITE. Are you going to be back in to see us with a recommendation before March 31?

General RUSS. Yes, we will.

Mr. WHITE. Not only the destiny of these but also clearly the utility of the funds that you have in fiscal year 1982, which show up to be $16 million.

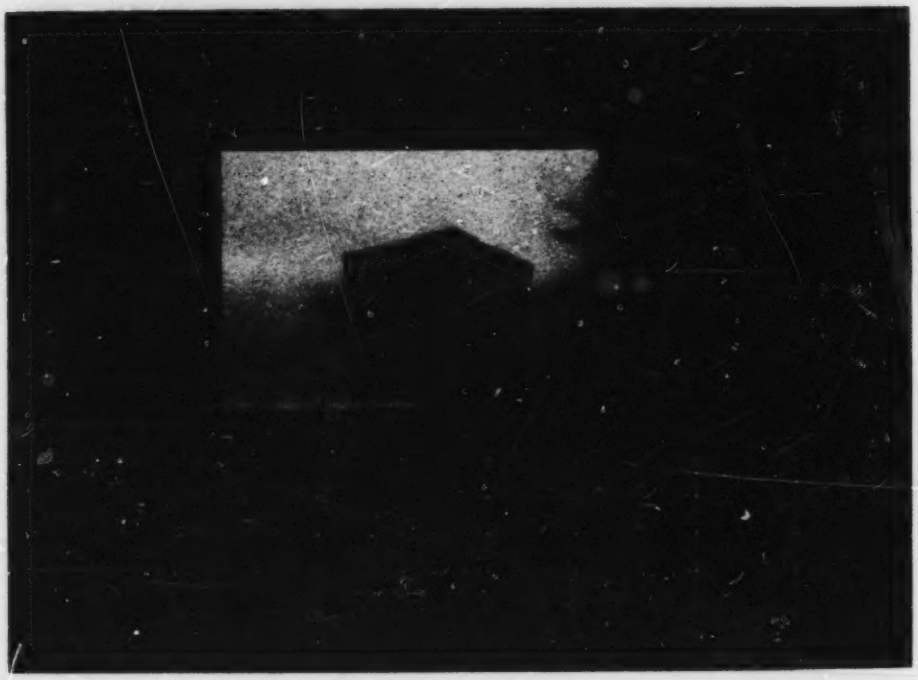


General RUSS. The next munition is a land mine. We call it the Gator. It is carried in the same tactical munitions dispenser I showed you before. Each one of those dispensers carries 94 mines.

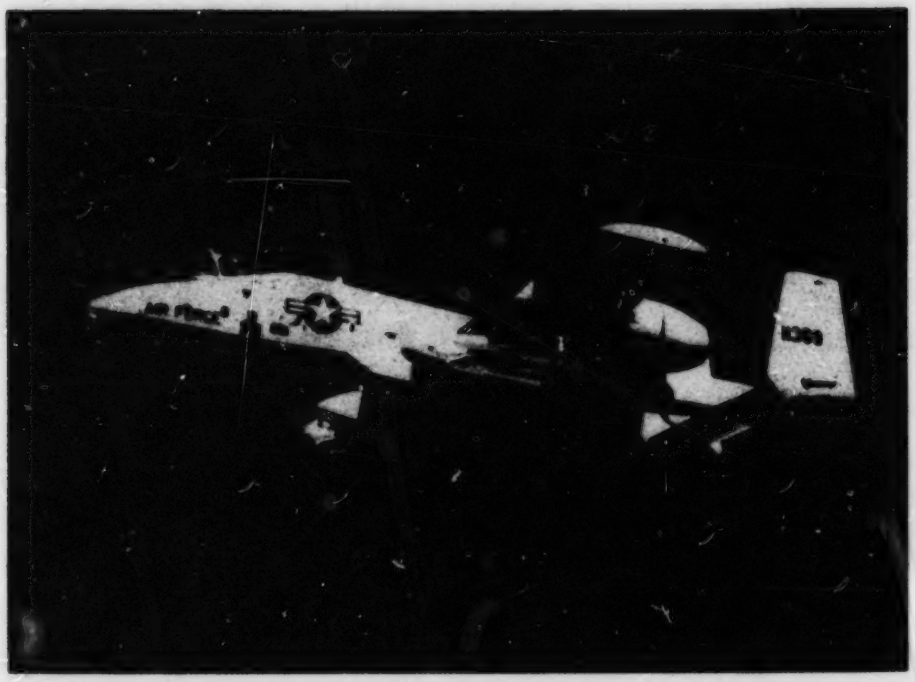


The mines look like this. We have 72 of them for antiarmor and we have 22 of them for antipersonnel.

We start production in 1982 and we will have an IOC [deleted].

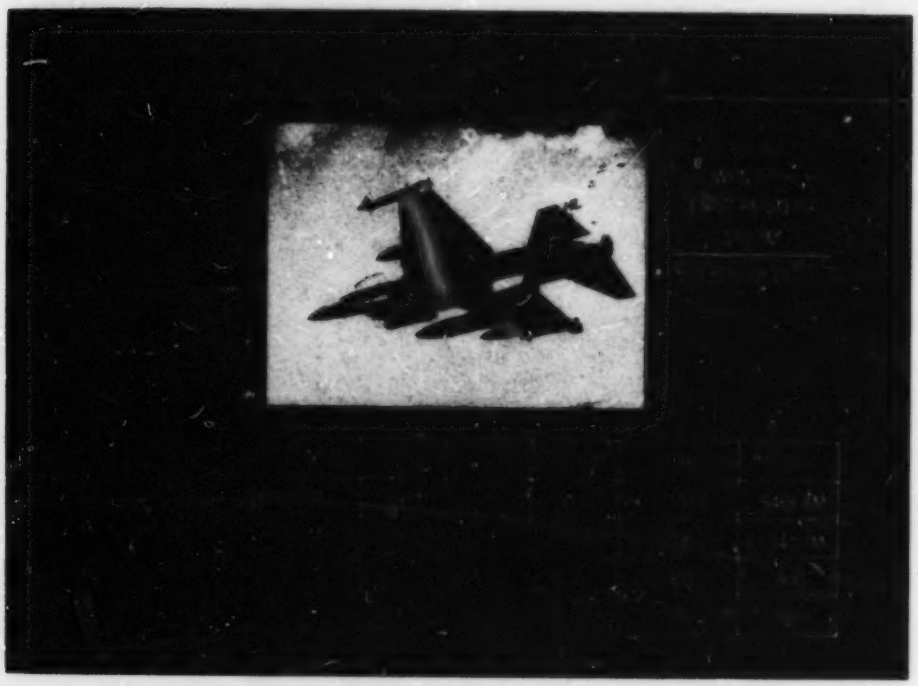


We are buying 250 of them in 1983 for $20.5 million, and then building up to large quantities.



The next program is one that I mentioned earlier, which was the Lantirn pod. They give our fighter aircraft, our F-16's and A-10's, a night window. The program is composed of three parts--wide-angle HUD or wide-angle sight, for the pilot to look through.

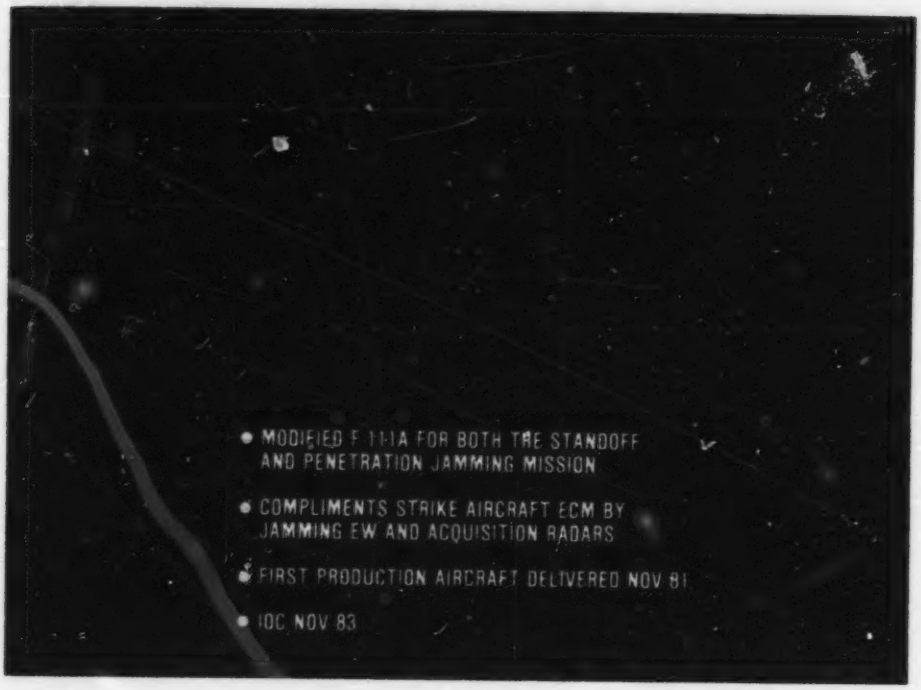
We have a navigation pod that has a terrain-following radar in it, and an infrared FLIR, and we have a targeting pod.



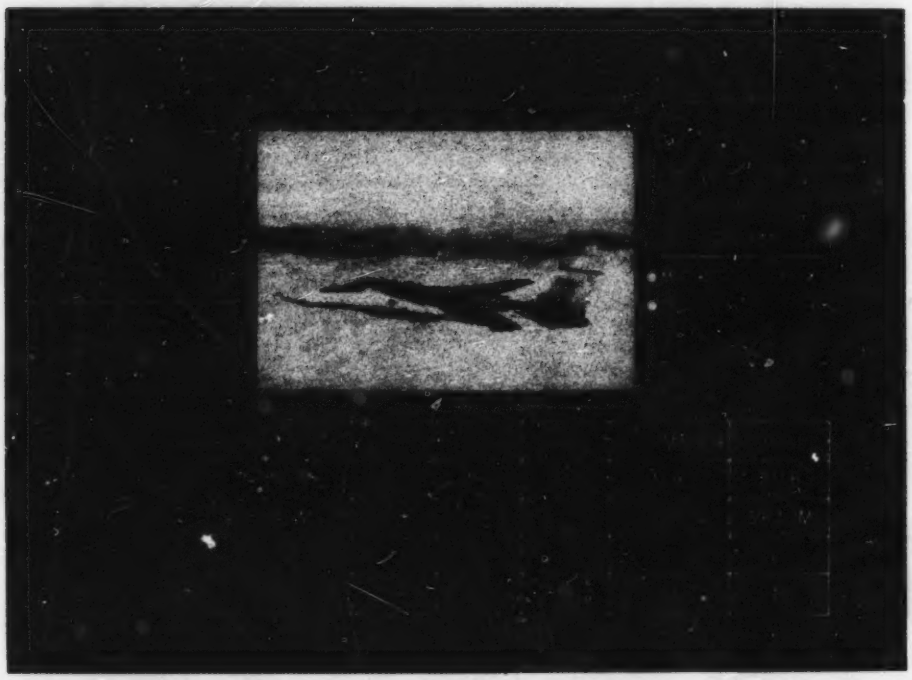
We plan to buy some 300 of these pods. In 1983 we are requesting $15.7 million for production readiness. We have scaled the program down somewhat from what it was last year. We have designed a lesser risk development but it has stretched the program. We are looking now at comparative demonstrations with this sort of system and some other systems in accordance with the congressional guidance of last year.

The fourth area I would like to go into is defense suppression, electronic warfare.

First, our EF-111. The EF-111 is designed for both standoff jamming and penetration jamming. It complements our strike aircraft. We delivered our first aircraft in November 1981, and our IOC in November 1983. In 1983 we procure the last nine aircraft for $203.6


• MODIFIED F-111A FOR BOTH THE STANDOFF AND PENETRATION JAMMING MISSION
• COMPLIMENTS STRIKE AIRCRAFT ECM BY JAMMING EW AND ACQUISITION RADARS
• FIRST PRODUCTION AIRCRAFT DELIVERED NOV 81
• IOC NOV 83

million--I say procure the aircraft—I should say procure kits to modify the last aircraft.



The Air Force is currently looking to see whether there is any flexibility within the force to modify any more in 1984. As I told you before, the F-111 force is very short but this is a high payoff capability. Whether we will recommend any in 1984 or not, I don't know.

Mr. WHITE. Where would they come from?

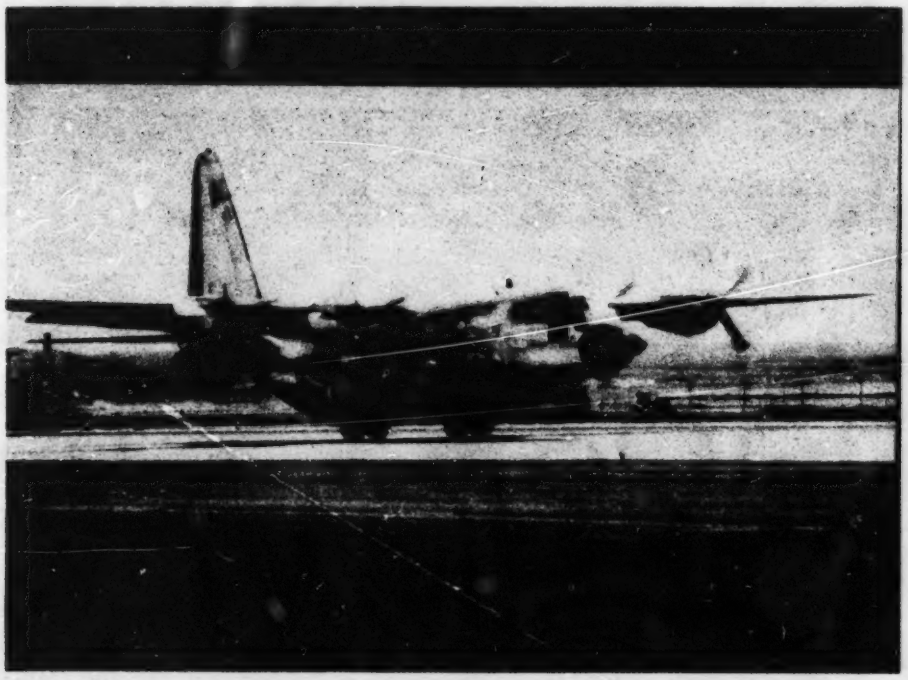
General RUSS. They would have to come from the existing training base in the United States. We would have to find some other way to train pilots.

Mr. WHITE. Other than EF-111's?

General RUSS. Yes.

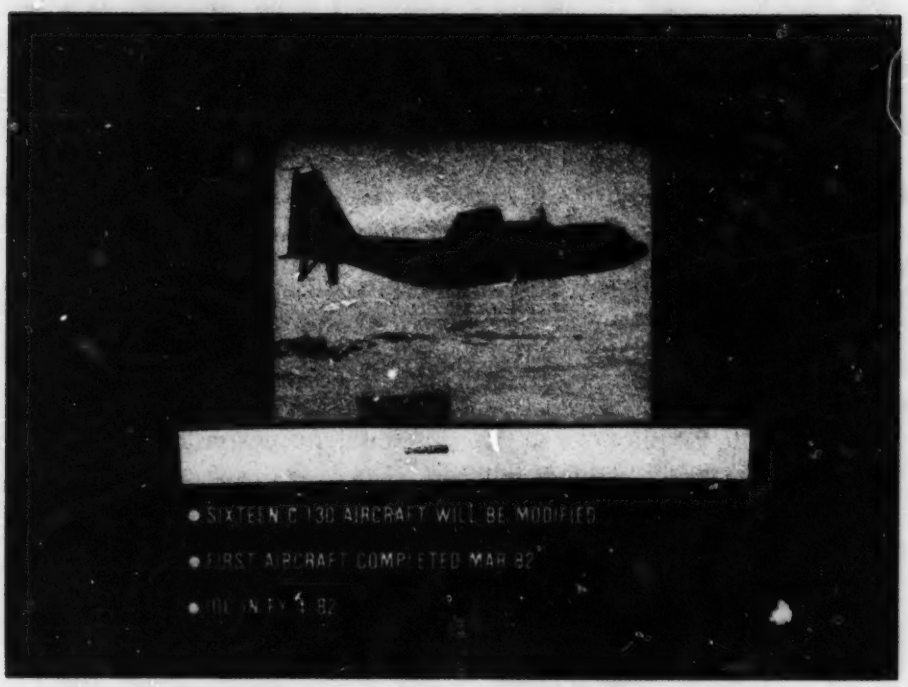
Mr. WHITE. That you said you are in short supply of, and you want to keep in the force structure for deep interdiction?

General RUSS. Yes. You are caught between the rock and the hard spot. The airplane is so good for one mission and for the other mission, and you don't have enough.



Mr. WHITE. Why don't you take a blood oath and keep your promise and say you are going to stop the program right here?

General RUSS. That is what the program is, right there.



General RUSS. Yes, it is.

Mr. MCCURDY. Tell me something about whose primary responsibility it is to kill tanks. We have A–10's; we have the Army with a $13 million helicopter designed specifically for it. You have hand-held antitank weapons. We see billions and billions of dollars spent on antitank weapons. Whose primary responsibility is it to kill tanks?

General RUSS. It is a joint responsibility between the Air Force and the Army.

General BURKE. In the basic strategy we accept that the NATO armies are going to be outnumbered in tanks by perhaps 3 to 1 or even higher if we have a war in central Europe. The U.S. Army, along with the other NATO armies' approach, [deleted].

Mr. WHITE. I have a couple of questions:

The WASP is a little heat missile, high explosive, copperjet?

General BURKE. Its sensor is a millimeter wave.

Mr. WHITE. What does it actually penetrate with?

General RUSS. It is a forged warhead.

Mr. WHITE. Depleted uranium?

General RUSS. No, I don't think so.

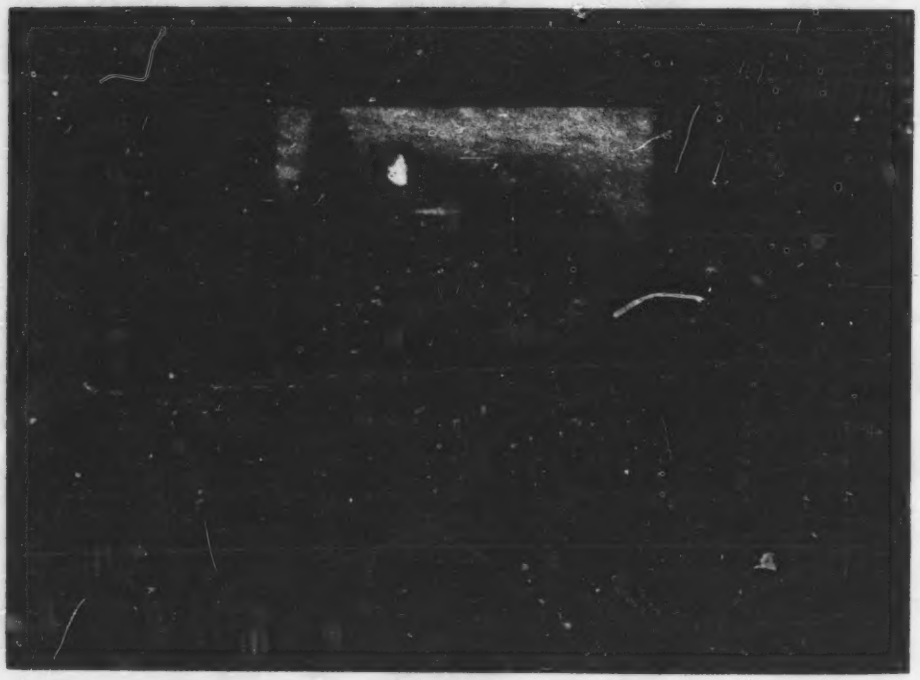
Mr. WHITE. The Army tells us they need 120-millimeter rounds in depleted uranium to penetrate a tank in the toughest parts. The A–10 needs 30-millimeter depleted uranium in the softest spots when they can pick them out and shoot at them from the top.

Have you taken the tanks out there, dispersed them out, instead of putting them all around in a circle 20 feet wide, and dropped these out there? Did you actually penetrate?

General RUSS. We have with this.

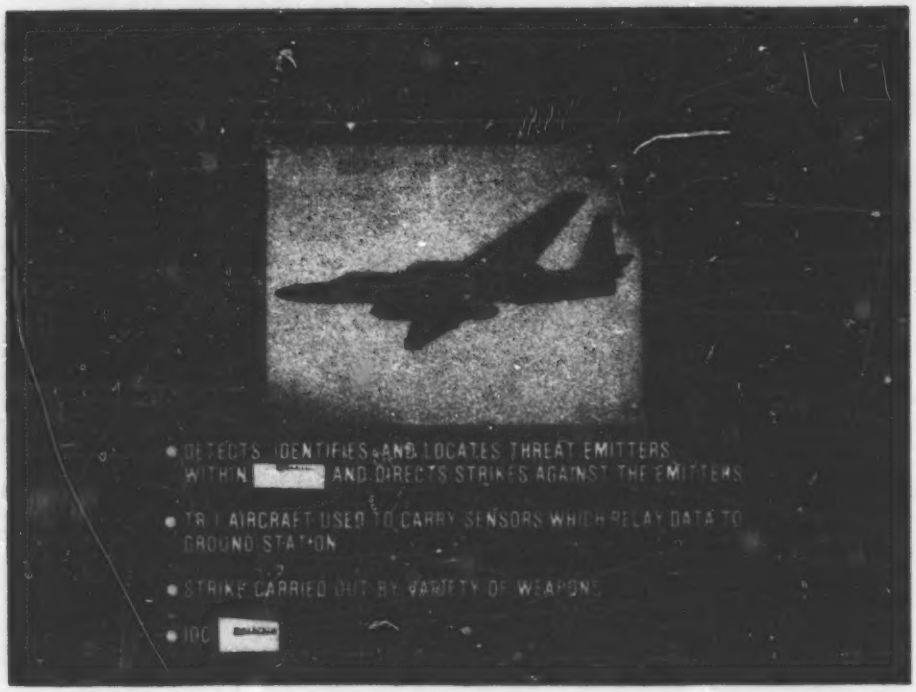
Mr. WHITE. Where did it penetrate the tanks?

Compass Call is an airborne jamming system that we put into our C–130 aircraft. It will disrupt enemy [deleted]. The total programed force is 16 aircraft. We will get our first aircraft this month and it will have an IOC by the end of the year.



$16.8 million will procure improvement kits for the first 10 aircraft.

A precision location strike system is shown on this chart over here. It is composed of three airplanes that fly orbits. They look over the border and pick up any emitter that is over here, any ground emitter. That data is piped back down to a ground process-

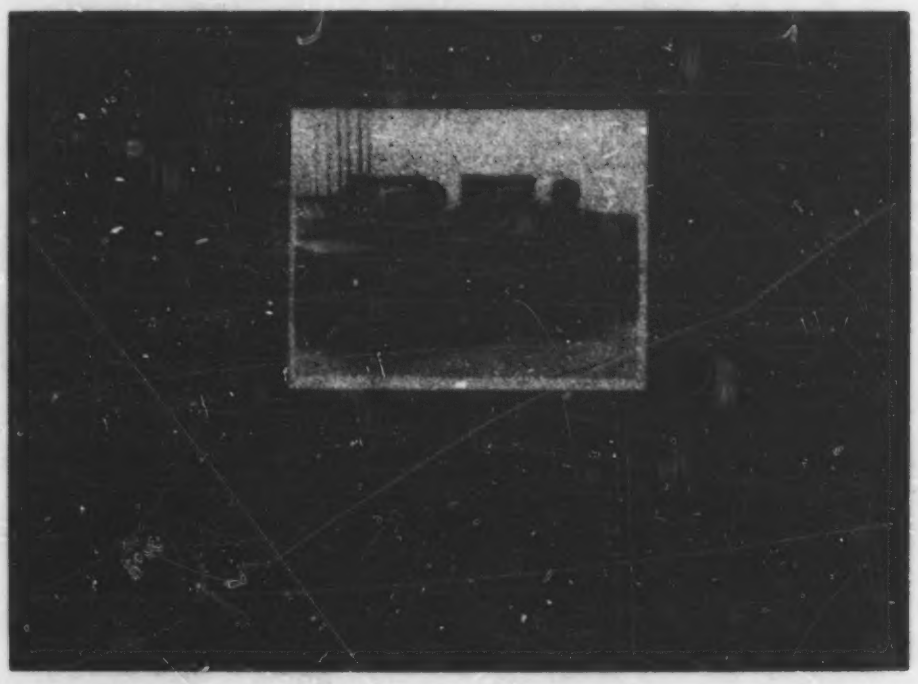

• DETECTS, IDENTIFIES AND LOCATES THREAT EMITTERS
WITHIN [redacted] AND DIRECTS STRIKES AGAINST THE EMITTERS
• TR-1 AIRCRAFT USED TO CARRY SENSORS WHICH RELAY DATA TO
GROUND STATION
• STRIKE CARRIED OUT BY VARIETY OF WEAPONS
• IOC [redacted]

ing station; then you can direct weapons on it. You can take a fighter, bring him in and drop a weapon on it. You can bring a fighter in and drop a plain iron bomb on it. You can use artillery and shoot at it.

There is a multitude of different types of weapons you can use with the system.

Again, as I discussed before, this is a TR-1. We just put a new nose on it. We change our nose and it takes approximately 6 hours to do that.

Mrs. BYRON. How large is the central processing system and how far away can that be from the aircraft?



General RUSS. It is about the size of two of these rooms.

Mrs. BYRON. So it has to be a fixed unit?

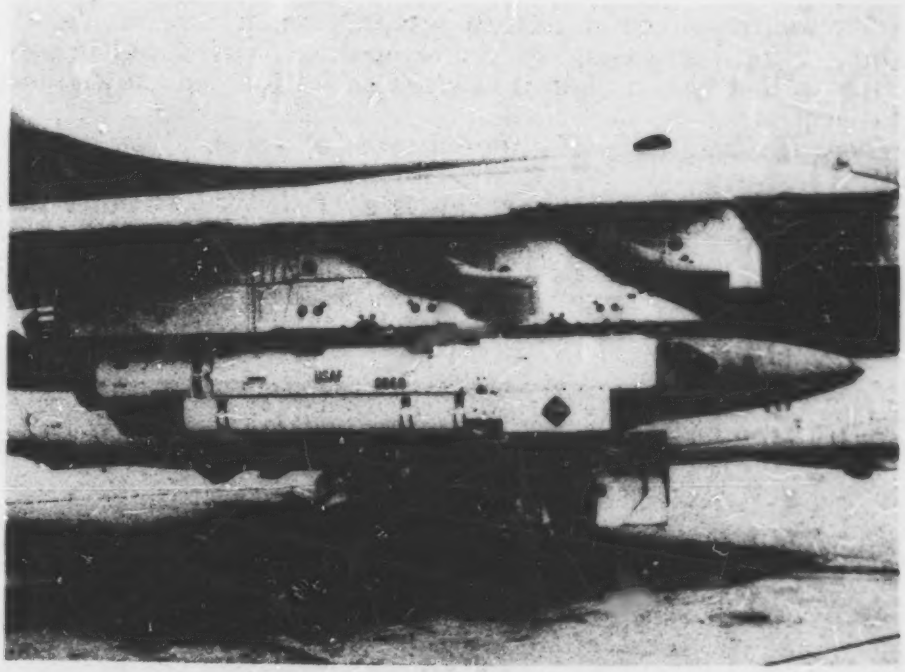
General RUSS. It is a fixed unit.

Mrs. BYRON. How far away can the aircraft operate from that fixed unit?

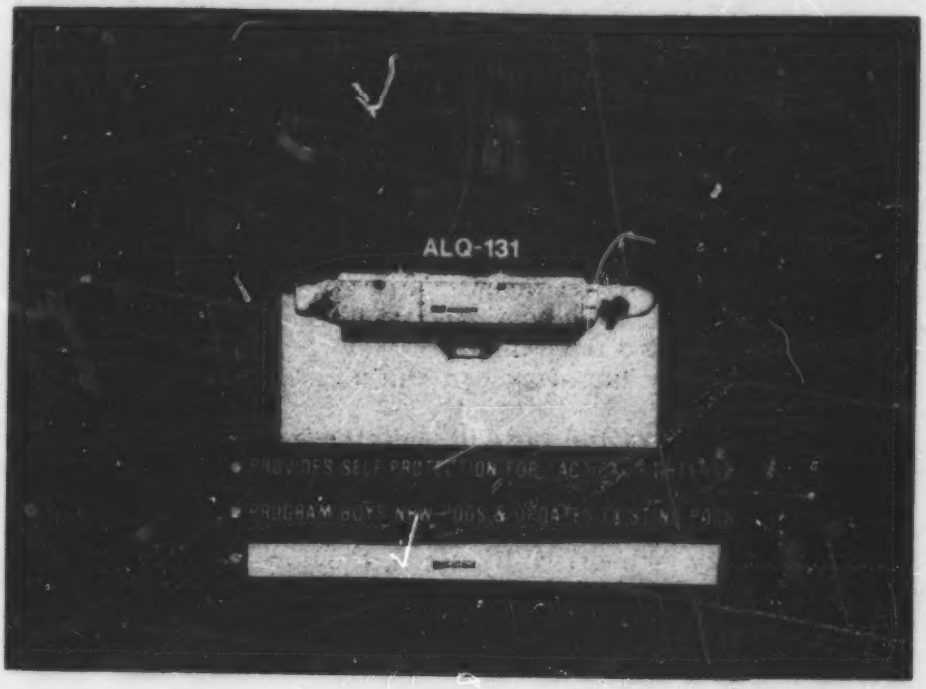
General RUSS. It is line-of-sight, but these airplanes fly at [deleted] feet. In the central European environment you can have one in England. In fact, we plan on putting one in England and one in Germany in hardened shelters. We will put them in some sort of hardened facility. When I call it fixed, they are fixed in that they are not easily moved, but you can take the equipment and put it in a van and move it somewhere else if you want.

We would rather put them in a hardened facility like a cave or something of that nature.

We are asking for $1.8 million in 1983 to continue the integration of the PLSS system in the payload areas of that aircraft.

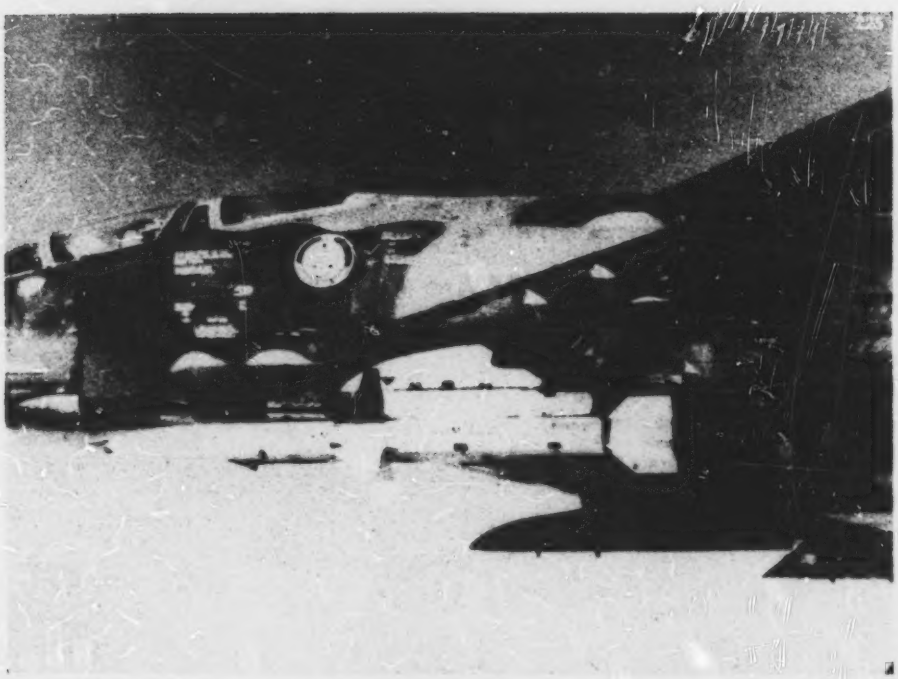


The next area is ECM pods. Currently we have two major types of pods in the inventory. This is what we call an ALQ–119 pod, made by Westinghouse. This is an ALQ–131 pod, also made by



Westinghouse. In this program we do two things: We buy pods and we update pods.

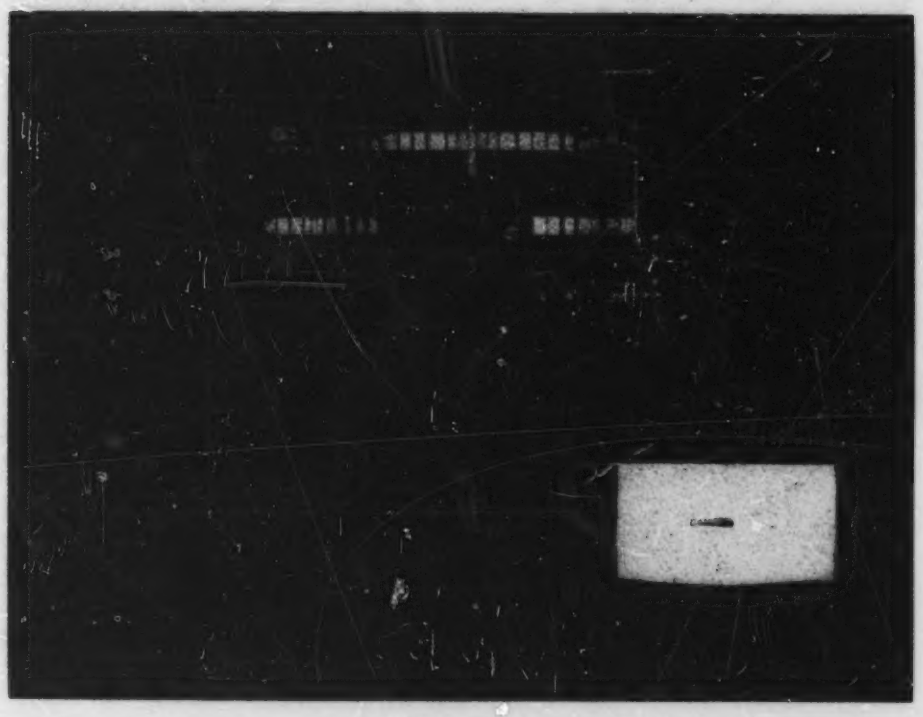
As you can see here, the $227.4 million in 1983 is for buying pods, 131's, updating 131 pods, updating ALQ-119 pods, and some other odds and ends.



The only lethal missile we have in the defense suppression area is the high-speed antiradiation missile. This is being developed in a joint program with the Navy and the Air Force. The Navy is lead

HIGH SPEED ANTI RADIATION HARM
• AIR TO SURFACE MISSILE TO ATTACK ENEMY RADARS
• PRIMARY ORDNANCE FOR F-4G WILD WEASEL
• JOINT NAVY AIR FORCE PRODUCTION DECISION FY 82
• IOC IN [redacted]

service on that. It is the primary ordnance for our F-4G airplane and is designed to kill enemy radars.



We are asking for $159.8 million in 1983 and will buy 206 missiles. We plan to buy 136 this year. This will continue the ramp-up to the full objective of about [deleted] missiles.

The fifth area I would like to cover in our procurement program is what I call other tactical forces, primarily because they did not fit in some of the other brackets I put them in.

First is the KC-10. I won't get into that too deeply because General Burke covered that with the committee sometime ago, but I thought it was necessary to bring it up because of the great contribution this gives to the tactical forces.

As you know, it uses a worldwide support system. Currently we have six of them in the inventory. We are going to increase our buy to 60 aircraft, $790.1 million in 1983 to buy 8.

We are currently developing a contract, a multiyear proposal, that hopefully should save us from $500 to $700 million over the timeframe. That should be over to Congress in a very short period of time.

Mr. KLEIN. General Russ, the Congressional Budget Office has issued a study recently which would indicate that really the KC–10 is all we need to buy for the SAC missions and the KC–10 could do the entire job. Have you read the report?

General BURKE. I have read it and we have done an assessment of it. We disagree quite strongly with some of the assumptions and conclusions that are in there. We are preparing our review of it, which we will provide to the CBO. We will be happy to furnish a copy to you.

We disagree with them in two major areas: First, they came up with an altogether different requirement than we did, and they did that by developing a general nuclear warplane or SIOP of their own, which is markedly different from the one that CINCSAC works with. It has obvious flaws in it. For instance, they were imagining they could take an unreengined KC–135S from fields with inadequate runway, fully loaded, when in fact you have to down load those airplanes 30,000 or 40,000 pounds to get off the runway.

They have that kind of mistake. They are not familiar with the subject.

Second, their calculations as to the cost were a bit different than ours, enough to give you a different answer. It is not an overwhelming, clear cut one that is three times better than the other.

It is a fairly close call. We studied this long and hard and we are convinced that the KC-10 is a superb airplane, the right choice and a fairly limited size, 60 airplanes, for power projection. There is nothing better than getting forces out there long distances without reliance on enroute bases.

On the other hand, we are equally convinced for the bulk refueling job the reengined KC-135 is the best and most cost effective choice. I think we have solid documentation for that.

The reason I am so confident of it is that when Dr. Brown became Secretary of Defense he came with the same idea that the CBO had and we spent about a year and a half convincing him that we had the correct answer. He came to believe that, and he is not an easy man to convince.

Mr. KLEIN. Did the study take into consideration the fact that you might want to take the B-52's back home?

General BURKE. They did some things that I think General Davis of CINCSAC would say are absolutely unacceptable to him as a military commander.

Mr. KLEIN. I would appreciate having your analysis.

General BURKE. I will be happy to furnish it.

[The following information was received for the record:]

ANALYSIS OF CBO STUDY ON KC-10

The Air Force has completed its initial assessment of the Congressional Budget Office (CBO) Aerial Tanker Force Modernization Study. The CBO study examined three alternative tanker force options: (Option One) the Administration's program to modernize/reengine approximately 300 KC-135 tankers with CFM56 engines (KC-135R) and purchase an additional 44 KC-10s; (Option Two) a CBO force that terminates the CFM56 program, reengines 185 KC-135s with donor JT3D engines (KC-135E), and purchases 44 additional KC-10s; and (Option Three) a CBO force that limits tanker modernization to an additional 44 KC-10 procurement only. The CBO study asserts that Option Three is the most cost-effective tanker force enhancement program, followed by Option Two, with Option One the least cost-effective.

Air Force Studies and Analyses reviewed the three CBO options and their total impact on (1) tanker force demand, (2) capability and modernization, and (3) overall cost-effectiveness. Our analysis does not support the CBO conclusions. The CBO projected tanker demand is significantly understated. The report fails to account for the impact of not modernizing the KC-135A force. Cost-effectiveness conclusions are based primarily on near-term investment costs rather than total force investment and continuing ownership costs. The CBO study also employs the KC-10 in the strategic nuclear mission role without considering the impact on the airlift acquisition strategy. The KC-10 was purchased as a force projection asset, not to support the strategic nuclear mission. When acquisition and ownership costs, tanker demand and capability, tanker modernization, and mobility requirements are accounted for, Option One is the most cost-effective option.

AERIAL TANKER DEMAND

Total tanker demand is a function of strategic nuclear and general purpose requirements. The CBO study has the current and projected tanker requirements significantly less than the actual requirements.

Congressional Budget Office estimates for tanker requirements to support strategic nuclear forces are based on a computer model that does not reflect the complexities of strategic nuclear planning. It fails to include a large number of important variables and is based on a most-optimistic approach. The Air Force uses computer modeling techniques based on 30 years of practical experience in determining actual refueling requirements. Precise refueling requirements for strategic forces are classified. Those requirements do, however, far exceed the CBO projections.

The CBO general purpose tanker requirements are much lower than Air Force requirements. The study assumes a low demand to support NATO operations. Air Force studies have validated NATO tanker demand well in excess of 200 aircraft over the duration of the conflict. The CBO study understates tanker demands to

support a Rapid Deployment Force deployment because it assumes average demand of F-15 squadrons alone, rather than a mixed force, and does not account for attrition fillers. In reality, in a Persian Gulf scenario, tanker requirements are approximately twice the CBO requirements. The CBO study also fails to address the possibility of simultaneous conflict in separate theaters of operation. The combined CBO factors minimize general purpose force requirements.

TANKER CAPABILITY/MODERNIZATION

The CBO study states that Options One, Two, and Three provide excess tanker capability beyond 1987, 1989, and 1991, respectively. Based on Air Force projected tanker demand, none of these options provide excess capability and only Option One meets the Air Force moderate risk demand. Neither of the CBO options meets the Air Force moderate risk requirements and neither approaches the low risk requirements. Option One is the only tanker force that gives the Air Force the capability to tailor its tanker capability to support requirements in the 1990s and beyond.

Only Option One provides a comprehensive modernization program for the KC-135 fleet. The KC-10 provides substantial new capability quickly and the KC-135/CFM56 program solves critical engine problems with the present J57 engine, while also modernizing 34 major systems or subsystems.

Option Two with JT3D reengining is not a total KC-135 modernization program and fails to correct all of the KC-135 deficiencies. To meet the Air Force's moderate risk force would exceed the total worldwide ownership of the lower cost JT3D engined 707-100/720s. The Air Force would be forced to procure about 100 of the higher cost 707-200, 300, 400s to meet this option. There are also unanswered questions concerning the maintenance status of those engines.

Option Three only modernizes the force with KC-10s and eliminates any reengining effort. Option Three ignores the impact of supporting the older, less fuel efficient KC-135s along with the KC-10s. Without CFM56 reengining the Air Force would be forced to seek up to $1.2 billion to insure a completely reliable J57 engine. With that, the J57 would remain a 1950 technology, noisy, dirty and extremely fuel-inefficient engine. The operations and support cost of continuing to operate the KC-135A make Option Three the least cost-effective option, rather than the most cost-effective.

TANKER FORCE COST-EFFECTIVENESS

Tanker force cost-effectiveness is a combination of acquisition, operating costs, and tanker improvement factors. The CBO cost-effectiveness conclusions were based primarily on acquisition costs rather than the total costs of acquiring and operating a total force overtime. When a comprehensive, life cycle approach is used, Option One is the most cost-effective approach, Option Two is second, and Option Three becomes the least cost-effective approach.

A detailed analysis of life cycle costs for the KC-135 is included for comparison. This further refines Air Force analyses provided to the House and Senate Appropriations and Armed Services Committees in December 1981. The CBO study differs in assuming a 43 percent improvement for the KC-135R versus 50 percent used by the Air Force. It also assumes improved fuel efficiency of 21 percent for the KC-135R versus 25 percent. Life cycle costs are sensitive to these changes. Air Force analysis indicates the KC-135R provides an improvement in capability that ranges from 40 to 200 percent, depending on the length of the refueling mission. The aggregate improvement of 50 percent used by the Air Force is conservative.

In summary, the Administration's program to reengine approximately 300 KC-135s through 1987 with CFM56 engines and purchase an additional 44 KC-10s is the most cost-effective option when total force costs are considered. It is the only program that will meet the moderate risk demand for air refueling in the 1990s. Finally, it is the only option which modernizes the KC-135.

20-YEAR TANKER LIFE CYCLE COSTS PER PAA

[In millions of fiscal year 1981 dollars]

Cost category	KC-135A	KC-135E	KC-135R
Constant fuel costs:			
Acquisition		4.2-7.3	15.0
Modification	2.9	.8	.8
20-year operations and support (except fuel)	21.0	18.5	18.7

20-YEAR TANKER LIFE CYCLE COSTS PER PAA—Continued

[In millions of fiscal year 1981 dollars]

Cost category	KC-135A	KC-135E	KC-135R
20-year fuel	16.7	14.7	12.5
20-year life cycle	40.6	38.2–41.3	47.0
20-year life cycle factored to KC-135A equivalent	40.6	32.6–35.3	31.3
10 percent annual fuel cost growth:			
Acquisition		4.2–7.3	15.0
Modification	2.9	.8	.8
20-year operations and support (except fuel)	21.0	18.5	18.7
20-year fuel	63.7	56.0	47.8
20-year life cycle	87.6	79.5–82.6	82.3
20-year life cycle factored to KC-135A equivalent	87.6	67.9–70.6	54.9

Equivalence ratio: In the aggregate, 1 KC-135R (CFM56) equals 1.5 KC-135As and 1 KC-135E (JT3D) equals 1.17 KC-135As.
Fuel efficiency: Compared to the baseline KC-135A, the KC-134R is 25 percent more fuel efficient and the KC-135E is 12 percent more fuel efficient.

Mr. WHITE. One quick question on the KC-10: I understand that the funding profile that was put in there was not actually done by the Air Force, but was inserted by OSD under some assumptions and essentially the KC-10 program as is presented in the budget may not be executed, may take some different kind of funding profile.

Could you get back to us on that before the markup, also?

General BURKE. We will. We hope to make this work. I think what we would like to do is make agreement that we go ahead and commit to the remaining 44 airplanes, get the savings. If so, I think we can do it within this funding profile.

We will put that on our list of things to get back to you.

[The following information was received for the record:]

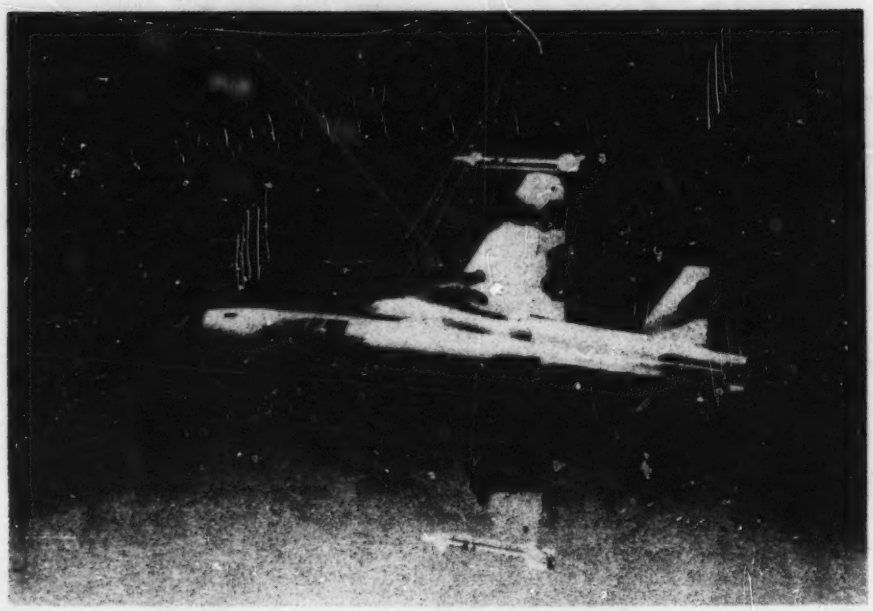
FUNDING PROFILE FOR KC-10

We are currently staffing a multiyear with expanded advance buy procurement package through the Pentagon that will result in the procurement of the 44 KC-10s at an overall price over $215 million below the budget request. The following are the current Air Force estimated yearly requirements for the weapon system and initial spares:

Year	Weapon system	Initial spares	Quantity
Fiscal years:			
1982	120	0	0
1983	795	28	8
1984	759	54	8
1985	764	56	8
1986	485	72	12
1987	105	0	8

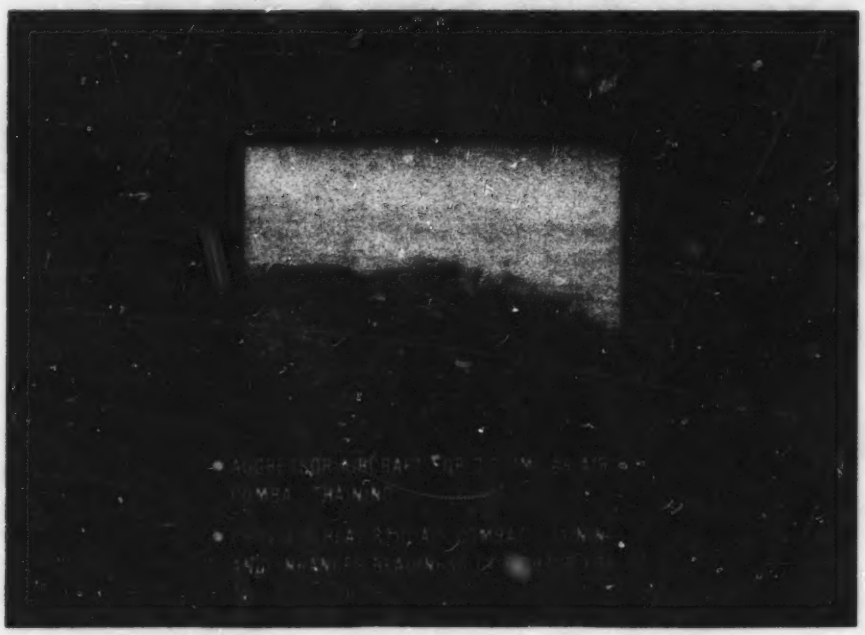
All possible action is being taken to ensure receipt by the Congress during markup.

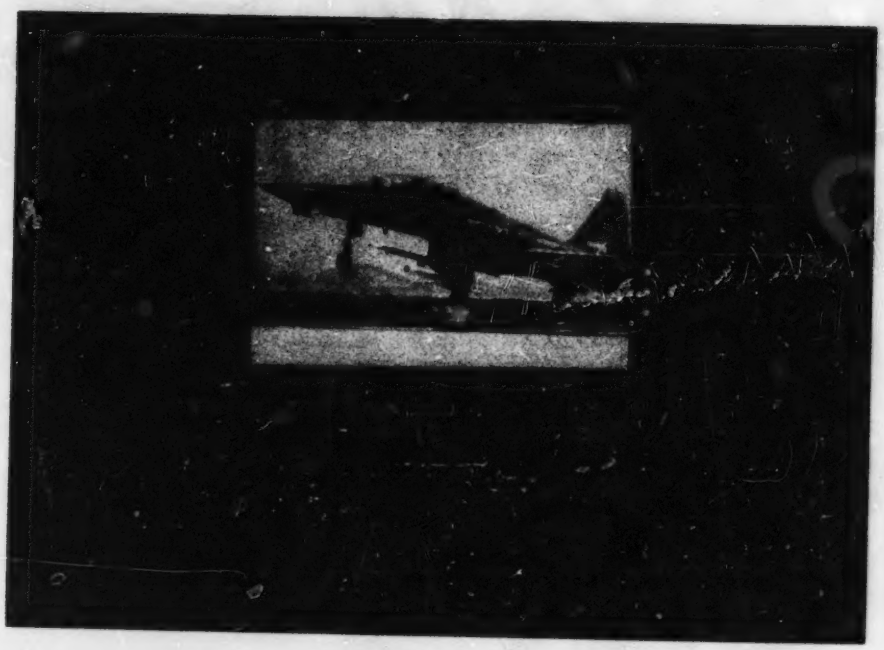
General RUSS. Let me say, Mr. White, that the primary changes in that profile are in the outyears, not necessarily in the 1983 time period. It is the outyears that need to be juggled.



Our F-5's are primarily aggressor airplanes to train our tactical fighter pilots. In addition to aggressor aircraft, we also have 30 F-5's down at Williams Air Force Base to train foreign military sales students in the aircraft.

What has happened is that over the years we have crashed some of these airplanes and now we are at the point where we need to buy some to fill back up to the authorized level in the squadrons.





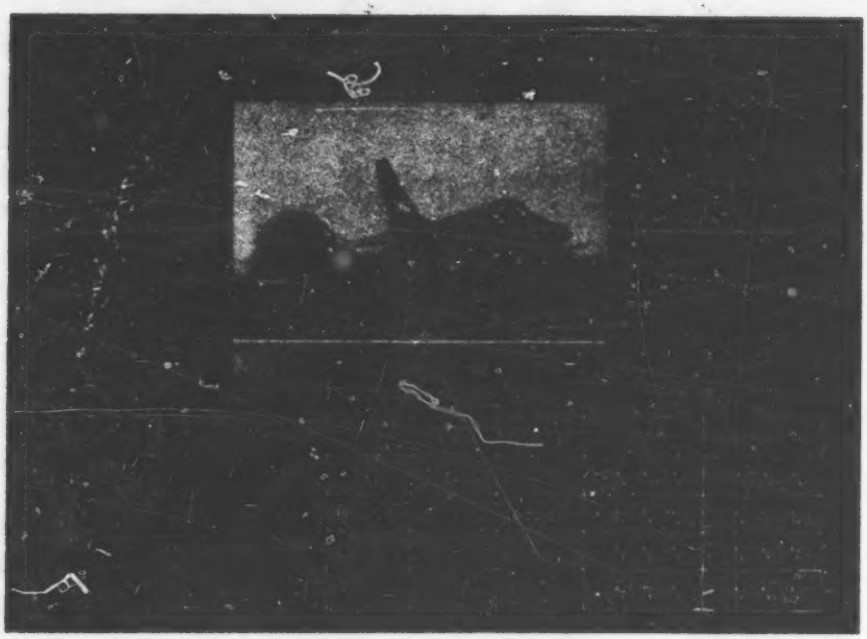
In 1982, we bought three; in 1983 we are going to buy three; in 1984 we want to buy five. We will buy a total of 11 aircraft.

Some of these will be two-seaters as shown here for training, to check people out. The others will be the single-seater like that one over there [indicating].

General BURKE. In answer to the earlier question about G's, these are F's. The G's are not yet flying.

• REMOTELY CONTROLLED VEHICLE THAT SIMULATES
REALISTIC INFRARED & RADAR SIGNATURES OF THREATS
• ENSURES AIR TO AIR WEAPON SYSTEM EFFECTIVENESS
AND ENHANCES AIRCREW TRAINING
• INITIATE FIREBOLT FLIGHT TEST FY 83
• INITIATE PROCUREMENT OF ARMY MQM 107

General Russ. Aerial targets, sometimes not very glamorous but very essential—we have two types of targets, subscale targets and full-scale targets. Here are two subscale targets. This is the BQM–34. This is the MQM–107, which is an Army-developed drone.



As we proceed with next year and the year after, these will be replacing all of those in the next few years. We use them both to test our missiles and also to test our air crews.

In addition to these, we have in this line what we call a high-altitude, high-speed target which has been named the Firebolt. We will be continuing testing that in 1983.

Mrs. BYRON. Do you have different requirements than the Navy does for your drones, or is there a joint endeavor to standardize drones?

General RUSS. The Navy uses the same drone. It is fixed a little differently, because they drop some of theirs off airplanes because they are out over the water and so forth. It is basically the same drone. The full-scale drones are old airplanes that we have sent to the boneyard, so when we do that it is just a matter of whatever is available in the boneyard. We used to have F-102's.

As you saw in that picture, that missile I showed you before, we shot a lot of those down. We are no longer modifying F-102's; we are modifying 100's now.

The budget request for 1983 is $40.2 million to buy some of those BQM-34A's, some MQM-107's, and to modify the F-100.

• SPECIALIZED AIRCRAFT ENHANCED FOR NIGHT LOW LEVEL OPERATIONS
• USED IN SUPPORT OF SPECIAL OPERATIONS/ UNCONVENTIONAL WARFARE
• CURRENTLY 14 MC-130E IN TACTICAL FORCE

The MC–130 combat Talon aircraft is a specialized aircraft that we use for unconventional warfare and special operations. It operates at night primarily, flies at very low altitude, takes troops in, brings troops out, infiltration, exfiltration. It is part of a force that would be employed in any unconventional scenario.

Currently, we have 14 of them in the inventory. Our requirement is for 26. We have money in 1982 and Congress was gracious enough to add the money for us. We were unable to put money in in 1983, so there is none in there, but I felt that I should highlight this to you. While we don't have money in 1983, we do have money in 1984 and we will buy 2, and then 10 for a total of 12. This money is long lead money and can be applied against the 1984 buy.

That completes my run-through.

Mrs. BYRON. Very well presented, as usual.

Do we have any further questions?

Mr. Leath, do you have any questions?

Mr. LEATH. No, ma'am.

Mrs. BYRON [presiding]. If that is the case, the subcommittee will stand in recess until Wednesday at 10 a.m.

General BURKE. Thank you very much, Mrs. Byron.

[The following questions were submitted to the witness to be answered for the record:]

F-15 AIR TO GROUND ATTACK CAPABILITY

Question. How much money is in this request to provide the F-15 with an air to ground attack capability?

Answer. The fiscal year 1983 request includes $26.3M for the F-15 to support the comparative demonstration of F-15/F-16 candidate dual role air-to-surface aircraft to satisfy the Tactical Air Forces' requirement for long range, low level, under-the-weather aircraft. Most of the $26.3M would be used for flight test demonstrations, with a small portion used for initial engineering for integration of avionics/armament systems required in the derivative configuration.

It should be noted that the F-15 has always had an air-to-surface capability. Extensive flight testing in the air-to-surface role was conducted in the 1973–1975 time frame with excellent results. However, the F-15 has only been assigned to the air-to-air mission due to previous force deficiencies in that mission and the F-15's unsurpassed capabilities in the air superiority role.

WEAPONS COMPUTER/STORES MANAGEMENT SYSTEM FOR F-15

Question. Does the F-15 have a weapons computer/and stores management system? How much will that cost?

Answer. The F-15 has both a central computer (CC) and an armament control set (ACS) which have been integral parts of the avionics suite since the aircraft was first fielded.

The CC manages delivery of weapons, provides steering cues to the pilot, and provides weapons launch/delivery solutions updated by current navigational inputs. The ACS monitors and displays status of weapons onboard, controls pre-launch preparation and sequencing, and is used to arm the gun and armament.

An upgraded programmable ACS (PACS) has been in development since fiscal year 1981 in order to more easily accommodate additional avionics/armament interfaces such as AMRAAM, JTIDS, ASAT, AIM-7M and other potential weapons, such as ASRAAM. The PACS will be incorporated in F-15C/D production with the fiscal year 1984 buy and highlights a simpler multipurpose display. The recurring unit cost increase for the PACS is $216 thousand TY.

AIS MODIFIED FOR F-15

Question. Will the AIS (Aircraft Intermediate Support) need to be modified as well? Please provide for the record all tasks and estimated costs including simulators, spares, support, racks, pylons, etc., of providing an all-weather air-to-ground attack capability for the F-15. Also please include the number of aircraft you intend to modify.

Answer. In order to properly support the full F-15 air-to-surface derivative, there will be changes/additions to all affected equipments, auxiliary mission equipment (AME), and spares stocks.

Development cost of required modifications to the avionics intermediate shops, other support equipment, data, and training equipment has been estimated at $35M

(TY). The impact to spares, war reserve supply kits (WRSK) and base level spares stocks (BLSS) has been addressed as part of total spares projections in fiscal year 1985 and out. Specific cost estimates for spares impact are not available but are proportionately insignificant (2.5 to 4 percent).

Weapons pylons (MAU-12) have been and are procured with each aircraft for carriage of the 600 gallon fuel tanks. Racks will be provided as AME. The BRU-26 multiple stores rack has already been developed and is in flight test certification. No quantity production cost estimate has been obtained.

There is a requirement for 400 dual role air-to-surface derivative F-15 or F-16 aircraft. These aircraft will be from new procurement.

Plans To Fix Up or Improve the Readiness of F-111 Aircraft

Question. Why, then, don't you plan to fix up or improve the readiness of your F-111 aircraft which will do all the things and more than you expect to attain by investing in an air-to-ground capability for the F-15?

Answer. We are pursuing readiness improvements for the F-111. Increased spare parts funded in this and next year's budgets will bolster F-111 mission capable rates. Our engine rehabilitation and avionics reliability programs will also significantly enhance both readiness and mission performance. But even if all our F-111s were flyable on a given day, there would be more work for them to do than they could handle. We need to augment their unique capabilities with additional fighter assets.

Long Range Plans To Improve Readiness of F-111 Fleet

Question. Please provide for the Committee your long range plans to improve the readiness of the F-111 fleet and any modernization initiatives for that airplane.

Answer. We are now well into a program of funding increased spares and supplies for F-111 wings as well as other fighter units. The payoff from this is already apparent and will be more dramatic as more of the items purchased are produced and arrive at our operational units.

We are beginning a comprehensive rehabilitation program for the F-111 engine which will normalize maintenance cycles and replace high-failure parts with better ones. As a parallel effort, we are modifying some of the avionics to reduce failure rates and life-cycle costs. Some of these efforts are predicted to improve mean time between failure more than tenfold. As far as modernization goes, we are completing the equipping of one of our F-111 wings with the PAVE TACK infrared/laser system. This provides us a further increase in weapon delivery accuracy and allows delivery of precision munitions to the significant number of targets that can only be reached by the F-111.

Need for Additional Ground Support Equipment for A-10

Question. The procurement unit cost of the 20 A-10's in the budget is $17.1 million. This cost includes $46 million for peculiar ground support equipment and $9 million for data which you weren't going to request had there been no aircraft requested. Since there are no new units being created in the force structure with these 20 aircraft, why do we need additional ground support equipment? Why wouldn't it make more sense to buy additonal aircraft with this $55 million?

Answer. Half of the peculiar support equipment, budgeted in fiscal year 1982 ($46.8M), was deferred from prior years (except MATE and some A-10B peculiar items) as a result of prior year reprogramming or Congressional action on the fiscal year 1982 Appropriations Bill which reduced the weapon system by $20.0M ($229.7M to $209.7M).

Deferring support equipment from prior years has impacted logistic support for the A-10 and forced the continuation of Interim Contractor Support. If the fiscal year 1983 A-10s were cancelled, we would still require $46.8M to procure needed equipment to support aircraft already authorized and the A-10Bs.

The A-10B requirement is $4.6M and $20M is required for MATE to complete procurement of the last 13 test stations. The fiscal year 1983 requirement is a follow-on to $17M of fiscal year 1980 funds which procured the first 13 test stations. The second production option on MATE expires in fiscal year 1983 and cannot be deferred without significant cost increase.

Two years ago $10 million of fiscal year 1978 funds were withdrawn with the payback programmed in fiscal year 1983 at $16.0M. Fiscal year 1981 support equipment funds ($5.7M) were deferred to fiscal year 1982 and later to fiscal year 1983 when the Appropriation Bill reduction resulted in $6.2M being added to fiscal year 1983.

The total support equipment requirement is $46.8M ($20M for MATE, $4.6M for A-10B and $22.2M of deferred requirements) and includes $10M for organizational level equipment required by active units, $2.8M for intermediate level equipment also required by active units and $14M for depot level equipment. The MATE test stations are intermediate level equipment.

The data items are required by the A-10 production contracts. Most of the data items are associated with maintaining tech orders and over 75 percent of the data cost is direct labor cost. The list of data items is continually reviewed and was significantly reduced in fiscal year 1981. If the fiscal year 1983 A-10s were cancelled, data could also be cancelled but would be funded by another appropriation since the aircraft are no longer in production.

In this case, we believe that procuring aircraft instead of support equipment and data would be "penny wise and pound foolish."

Diversion of F-15's to the Strategic Air Defense Mission

Question. If Congress supports diversion of five squadrons of F-15's to the strategic air defense mission, why should they be replaced in the tactical interceptor force structure with F-15's?

Answer. As the Air Force's best all-environment air-to-air fighter, the F-15 is needed in significant numbers to defend rear bases and win air superiority over the battlefield in a theater conflict, whether in Europe, Southwest Asia, or the Pacific. Currently, there are 5½ wing equivalents of F-15s in the tactical forces. The fiscal years 1983-1987 program would provide five squadrons (90 combat-coded aircraft) to strategic defense forces to commence phase-out of the F-106 and increase the tactical F-15 force from 5½ to 6½ wing equivalents. These additional F-15s, with proven performance, more lethality, and more radar volume than any other available fighter, will be required into the 1990s to defeat the strategic and tactical threat.

Improved Radar and AMRAAM Capability for F-16

Question. Aren't the F-16C's funded in this request with the MSIP mods going to have an improved radar and an AMRAAM capability? Won't the F-16 with MSIP II have the same beyond visual range capability and aircraft intercept range as the F-15?

Answer. The fiscal year 1983 request for 120 F-16 aircraft includes 60 F-16A/B aircraft and 60 F-16C/D aircraft. The 60 F-16C/D aircraft (starting at aircraft number 786) will have production installation of the Multinational Staged Improvement Program (MSIP) Stage II systems to include the improved radar and AMRAAM Group A provisions. MSIP Stage III AMRAAM Group B production installation will commence with aircraft number 886 (fiscal year 1984 procurement request).

In terms of generic beyond usual range identification capabilities and the ability to exploit AMRAAM capabilities, the F-16 will be on par with the F-15. However, in terms of radar detection and lock-on ranges, the F-16 improved radar will be somewhat less than that of the F-15 radar capability due to antenna size constraints which are dictated by aircraft plan form and size.

Air Force Position on F-100/F-101 Engine Competition

Question. What is the Air Force position on the F100/F101 Engine competition? What is the relative system performance assessment of these two engines?

Answer. The Air Force intends to compete the F100 Digital Electronic Engine Control (DEEC) engine with the F101 Derivative Fighter Engine (DFE) for future engine requirements of the mid-eighties. The competition will be based on operability, durability, reliability, and maintainability with an emphasis on the systems' life cycle costs. Current Air Force analysis indicates that these two engine designs will provide equivalent aircraft performance. Therefore, engine thrust is not considered a factor in the competition.

Evaluation of F-15E/F-16E

Question. To remedy the serious shortfall in our long-range ground attack capability in night and adverse weather conditions, the Air Force is evaluating the F-15E and F-16E. How is this evaluation being conducted and what is its current status?

Answer. The Air Force is establishing a comparison evaluation program designed to provide an objective and impartial recommendation of the derivative that will best satisfy the Air Force's dual role fighter requirements. The elements of the comparison process include comparative flight demonstration technical analysis, mission

analysis, logistics survey, and contractor inputs. These elements will be used to assess aircraft performance, cost effectiveness and operational availability considerations.

Within Aeronautical System Division an impartial evaluation organization has been identified to perform and manage the comparison. The comparative flight demonstration will begin approximately July, after all final evaluation objectives have been identified.

Planned Quantity for F-15E/F-16E

Question. What is the planned quantity to be procured?

Answer. The Tactical Air Force requirement for either the F-15E or the F-16E as a new dual role fighter is 10 combat coded squadrons requiring the acquisition of 400 aircraft.

F-16E Evaluation

Question. Will the F-16E be available for evaluation?

Answer. Demonstration flight test of the number one F-16 derivative prototype aircraft is scheduled to start in July 1982. The number two F-16 derivative prototype (two-seat) aircraft is scheduled for flight test in October 1982.

Determination of Competition Criteria for F-15E/F-16E

Question. What criteria will be used to determine the winner of the competition?

Answer. The critical areas for evaluation are performance, mission effectiveness, cost, and operational availability. Performance obviously equates to the ability to do the job. But mission effectiveness will tell how well each aircraft does the job. Both are important, because each candidate may be capable of doing the required task but one may be significantly more effective.

Cost, of course, is a major factor and requires that we assess not only acquisition but also the cost of ownership. And operational availability deals with the number of aircraft ready to fly on any given day.

Numerous sources of information are available to evaluate each of these areas.

Flight Evaluation for F-15E/F-16E

Question. If a flight evaluation is performed, in what configuration will the aircraft be:

a. Aircraft engine comparison?

b. Weapon system evaluation?

Answer. A comparative flight demonstration will begin in 1982 to evaluate and verify F-15 and F-16 derivative prototype aircraft performance.

The F-16 derivative prototype configurations are as follows:

a. Aircraft No. 1—Single seat, F-16A avionics and latest available hardware, fourteen semi-conformal store stations, modified landing gear (48,000 lbs.), drag/spin chute.

b. Aircraft No. 2—Two seat, F-16B avionics and latest available hardware, fourteen semi-conformal store stations, modified landing gear (48,000 lbs.), drag chute and F101 derivative engine.

The F-15 derivative prototype configurations available to be evaluated are:

a. Aircraft TF-2—The second F-15B prototype (modified through contractor independent R&D) with conformal fuel tanks, missionized rear cockpit, EO/FLIR/Advanced sensor interfaces, and five stores stations.

b. Aircraft C-1—The first production single seat F-15C, previously modified to incorporate instrumentation and currently in use and for conformal fuel tank certification/qualification tests.

c. An F-15D aircraft (aerodynamically equivalent to F-15E) for operational evaluations.

All F-15 aircraft will use the F100 engine.

Basic flight test objectives for both the F-15 and F-16 derivatives include flying qualities, range/payload, performance, flutter, weapons carriage/separation, structural, and operational test and evaluation.

RF-4C Replacement

Question. Reconnaissance versions of the F-4, the RF-4C, were first delivered to the Air Force in the early 1960s. Since F-4 fighters are to be replaced over the next few years, are there plans to replace the RF-4C?

Answer. Yes. The Advanced Tactical Air Reconnaissance System (ATARS) program is directed toward evaluating alternatives for replacing the RF-4C. Near-term efforts will concentrate on replacing the RF-4C platform with a more survivable and supportable system. Future efforts are aimed at preplanned product improvements for sensors and associated processing/exploitation systems. Until studies are complete in fiscal year 1983, no specific platform or sensors will be selected. Funds for the studies are identified in Program Element 63239F.

Provide Details on F-15E

Question. The House conferees deleted DoD's request for $27.3 million to begin development of the F-15E, the Air-to-ground version of the F-15. This decision did not foreclose consideration of the F-15E; however, it did reflect Congressional opposition to the enhancement of the F-15 prior to receiving a comprehensive explanation of the Air Force's plan to meet its air-to-ground requirements. Can you provide us details of this plan and milestones for its implementation?

Answer. In January, the Air Force approved a briefing, entitled TACFORCE TARGET, which explains the Air Force plan to meet air-to-ground requirements into the 1990s. The briefing, classified SECRET NOFORN, is available for review at any time.

F-106 ANG Replacement

Question. General Creech, in his testimony before the House Appropriations Committee last June, indicated the Air Force's intention to keep buying F-15's and equip our obsolescent air defense forces. Does this include replacement of F-106's in the Air National Guard?

Answer. Our current plan is to replace active air defense F-106s with F-15s and ANG air defense F-106s with Advanced Medium Range Air to Air Missile (AMRAAM) equipped F-16s. However, the final F-106 retirement date is dependent upon Congressional funding for continued F-15/F-16 procurement and development of the all-environment AMRAAM capability for the F-16.

[Whereupon, at 3:35 p.m., the subcommittee was adjourned, to reconvene on Wednesday, March 17, 1982, at 10 a.m.]

REVIEW OF THE DEFENSE DEPARTMENT'S FISCAL YEAR 1983 BUDGET REQUEST

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Wednesday, March 17, 1982.

The subcommittee convened at 2:10 p.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

This week the subcommittee is going to continue its review of the Defense Department's fiscal 1983 budget request, specifically conducting hearings on Army tracked vehicles, weapons, air defense, and tactical nuclear force programs.

Today we are going to receive testimony on the Army's tracked vehicles representing the Army's second largest funding requirement, over $4 billion, for fiscal 1983. That $4 billion represents an increase of about a billion dollars over the 1982 appropriations which clearly reflects a transition of many land warfare systems into full-scale production.

During this hearing particular attention will be given to some of the most controversial programs such as the M1 Abrams tank, the Bradley fighting vehicles, formerly called the infantry and cavalry fighting vehicles, and the light armored vehicle programs.

With regard to the M1, it was almost a year ago on March 18, 1981 that the committee heard from Army witnesses who testified on the production, performance, maintenance, and cost of the M1 tank. Since then there has been a great deal written about the cost and the performance of the M1, virtually all of it negative. There have been allegations, claims, and counterclaims and, quite frankly, a good deal of confusion surrounding the Abrams tank.

Today, however, the committee is going to attempt to clear up much of this confusion by having the Army present in what might appear to be excruciating detail, but certainly we are going to need it, the facts concerning the M1 tank's, first of all, powertrain durability, second, maintainability, third, track durability, fourth, diesel engine backup program, fifth, fuel consumption rates and, finally, logistical and engineering support requirements.

The committee is going to ask the Army also to provide a complete account of the factors and circumstances that have caused the price tag on the M1 to increase since the committee was briefed last year.

The Bradley fighting vehicles are important systems in the Army's modernization program. Last year the committee motivated partially by what appeared to be an urgent requirement to field the infantry and cavalry fighting vehicles as quickly as possible supported the Army's program funding and scheduled profile. This year, however, while the Army has requested funding for 600 vehicles in fiscal 1983, it has reduced its fiscal 1984 requirements to 555 vehicles.

The committee would like the Army to explain why its fiscal 1984 requirements have been reduced and I think we might also ask them why, if they are going to reduce them, they reduced them simply by five vehicles. That would appear to be a matter of fine-tuning that is beyond the capabilities of the Army under a circumstance of this kind to determine.

The committee is also concerned about program cost growth. The most recent SAR, December 1981, shows that since the September 1981 SAR the estimated cost for this program has grown by $1.6 billion. That is as big a growth as we had on the AH-64 and that ain't peanuts. This large increase over just a 3-month period calls into question whether the entire program is actually able to be executed.

The multiple launch rocket system, one of the Army's more successful programs, has until now been in low-rate, initial production. The fiscal year 1983 request for $422.1 million to procure 23,640 MLRS rockets and provide for the advanced procurement reflects a steady building toward full-scale production.

The committee is aware that as major programs transition to full-scale production they frequently experience cost growth and production problems and we would not like this to happen with this particular program.

So the witnesses should be prepared to review the MLRS program and discuss issues such as the contractor's strike last year which may result in production, scheduling or cost programs.

Our first witness this morning is Maj. Gen. James P. Maloney, Director of Weapons Systems Office, the Office of the Deputy Chief of Staff for R. & D., and General Maloney will briefly cover the threat and review the major programs.

He will be followed by Maj. Gen. Durad D. Ball, program manager for the M1; Col. Peter M. McVey, chief of materiel fielding team on the M1 Abrams tank system.; Brig. Gen. Donald P. Whalen, the program manager for the Bradley fighting vehicles; and Col. Monte Hatchett, the MLRS program manager.

The program managers will provide the details of their program, including the fiscal year 1983 funding requirements.

Colonel McVey will provide a status report on the fielding of the M1 Abrams tanks in Europe.

Mrs. Holt, would you like to make a statement at this point?

Mrs. HOLT. Thank you, Mr. Chairman.

I would just like to echo your comments concerning the M1 tank and the other tracked vehicle programs.

I would also like to express some concern at the fact that the Army is not requesting funds in fiscal year 1983 for Guard or Reserve forces. It would certainly seem that at least a portion of the

$1 billion increase requested for tracked vehicles would be for improvements in the Guard and Reserve.

I would like for the witnesses to explain what the active Army is providing in fiscal year 1983 in terms of tracked vehicles, tanks, armored personnel carriers, and so forth to the Army National Guard and Reserve units.

In fact, Mr. Chairman, it may be useful to have the witnesses describe in general terms the process that the Army goes through in deciding how equipment is allocated to Guard and Reserve units. We need to understand their rationale because I know for 10 years I have been struggling in trying to figure out what it is and I still don't know.

I have always been a strong supporter of the total force concept which I think requires a partnership between the Active and the Reserve Forces, and it just doesn't appear, based on the fiscal year 1983 procurement request, that the Army is really serious about providing up-to-date equipment to these important elements.

I hope that our witnesses today can convince me otherwise.

Thank you, Mr. Chairman.

Mr. STRATTON. Thank you, Mrs. Holt.

I judge by the number of people out in the corridor that this is a very popular hearing today. Unfortunately, General Maloney's presentation at the outset is going to be classified. So we will have to go into executive session for the purpose of receiving that particular testimony, but the hearing will then be opened following General Maloney's presentation on the threat.

So once we have the room cleared, General, you may proceed.

At this point the Chair, pursuant to authority granted on March 11, will direct that the committee go into executive session and the staff will insure that the room has been properly cleared.

[Whereupon, at 2:17 p.m., the subcommittee recessed in open session and proceeded immediately into executive session.]

Mr. STRATTON. Go ahead, General.

STATEMENT OF MAJ. GEN. JAMES P. MALONEY, DIRECTOR, WEAPONS SYSTEMS OFFICE, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT, AND ACQUISITION, U.S. ARMY

General MALONEY. Mr. Chairman, I would like to give you a quick update on the Soviet threat to our tank fleet.

I would like to direct your attention to the bottom line of this fairly busy chart [deleted]. As you can see from the bottom line, the M1 is superior to the newer Soviet T-64 and 72 tanks and is comparable to the next Soviet tank, the T-80.

Now let's address the elements of this. Firepower [deleted]. Now survivability. We continue to consider survivability the most important characteristic of the Abrams. Special armor protection, compartmentalization of ammunition and fuel behind the armored bulk heads, the automatic fire detection and suppression system, and the onboard smoke generating system, and by the way, we plan to put these in the M60 as well, coupled with the tank's high mobility, agility, and low silhouette give the M1 crew unprecedented survivability. [Deleted.]

So to summarize, we believe the M1 is superior to the T-64, the T-72 and comparable to the next Soviet tank the T-80. [Deleted.]

I could characterize that tank and tank gun duel and the continuing buildup of these capabilities as a kind of cat and mouse game. The Soviets are most interested to know precisely the geometry of our armor and the composition of our armor because kinetic energy projectiles and other projectiles are but to try to achieve penetration, and we are trying to keep them from getting into our tank and vice versa. So it is very much a cat and mouse game and it is very detrimental if the Soviets are told that they can achieve certain penetration or they cannot. They learn a lot from this. [Deleted.]

Now on this chart [deleted] are the armor protection levels of the M60, the M1, and the M1E1 with the up-armored turret. The armor protection levels show the millimeters of equivalent armor in our targets that equate to the Soviet tanks. The up-armored turret on the M1 will achieve at least the protection level that is shown here. [Deleted.]

Mr. STRATTON. When will we have these [deleted] tanks out in the field?

General MALONEY. Sir, on the M1's that have been produced to this time, [deleted].

Now we expected that the Soviets would have better and better penetrators. So we have planned for many years to improve the armor of the M1. We have planned to improve it when we put in the 120-millimeter gun, and again about 5 years after that we have a generally planned upgrade of the M1 armor. In fact, the M1 is built in such a manner that by using armor plate we can grow, we can improve the capability of the M1's armor and we do intend to do this.

Mr. STRATTON. Can you describe what you mean by equivalent MM or armor? It is my understanding that the more unpenetrable armor is actually a kind of sandwich type of thing which is steel but something in the middle which is not steel. How do you establish an equivalent of that piece?

General MALONEY. For testing purposes we estimate from captured Soviet materiel which we measure or from materiel which they are fielding. We estimate the capabilities of, the thickness, for example, of the front of the turret. We then equate this to the impenetrability of a standard ballistic target. So we are using a standard ballistic target as a surrogate for many different kinds of armor. Armor that is cast has certain qualities, armor that is plate has certain qualities and armor that is built with air spaces, for example, has certain qualities. We equate these all to rolled homogeneous armor for ease in quantifying the effects of our bullets against these various kinds of armor.

Mrs. HOLT. Mr. Chairman.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Since we have a quorum here I wanted to move that the chairman be authorized to go into executive session for one subsequent day for the purpose of receiving additional security information.

Mr. STRATTON. The clerk will call the roll on the motion of the gentlewoman from Maryland.

Mr. CAMPBELL. Mr. Stratton.
Mr. STRATTON. Aye.
Mr. CAMPBELL. Mrs. Holt.
Mrs. HOLT. Aye.
Mr. CAMPBELL. Mrs. Byron.
[See page 556. Mrs. Byron voted "aye".]
Mr. CAMPBELL. Mr. Hillis.
Mr. HILLIS. Aye.
Mr. CAMPBELL. Mr. Mavroules.
Mr. MAVROULES. Aye.
Mr. CAMPBELL. Mr. Badham.
Mr. BADHAM. Aye.
Mr. CAMPBELL. Mr. Leath.
Mr. LEATH. Aye.
Mr. CAMPBELL. Mr. Courter.
[No response.]
Mr. CAMPBELL. Mr. McCurdy.
Mr. MCCURDY. Aye.
Mr. CAMPBELL. Mr. Kramer.
Mr. KRAMER. Aye.
Mr. CAMPBELL. Mr. Hertel.
[No response.]
Mr. CAMPBELL. Mr. Hunter.
[No response.]
Mr. CAMPBELL. Mr. Price.
[No response.]
Mr. CAMPBELL. Mr. Bennett.
[No response.]
Mr. CAMPBELL. Mr. Chairman, eight ayes.

Mr. STRATTON. The motion is carried and the chairman will have that authority for 1 additional day.

Mr. Mavroules, did you have a question?

Mr. MAVROULES. Mr. Chairman, I wonder if we could just deviate for a moment. I would like to ask a couple of questions of the General.

I can appreciate classified briefings, and I for one appreciate them very much and I respect them. But let me kind of rephrase this a little bit so maybe I can get some response from you and maybe to help you with your argument in trying to get funds through the Congress.

I don't think your problem personally is with the Members of Congress. I think we have been very supportive. We are going to ask some hard questions, of course. But I think you have a very serious problem with the public, the American people, in view of the fact that some of the documentaries, especially in the M1 tank, have given a tremendously negative effect on the overall operation not only of the M1 tank but the effectiveness and the efficiency relative to budgetary matters.

Now as much as I can appreciate classified information, I wonder if you can in open session give some kind of a message to the American people as to the quality of the M1 tank and what it means to our soldiers and our military people in the field, particularly in the European theater. What can we expect of the M1 tank?

Can we talk about things like that in the open so that we can get a true message across to the American people.

On the one hand, let me be very honest with you, you are getting your butt kicked from one end of the country to the other and, in turn, we are getting our butts kicked because we are the ones who have to vote the programs and the funding for them.

We simply cannot just say we are voting money for an M1 and we cannot tell the American people how good that tank is. I am not asking you to go into these detailed analyses, but you have to tell the American people something as to why we need it on time and why you need the funding for it.

Now I hope it is not asking too much, Mr. Chairman, for some response from you, General. When we open this meeting I would like to be able to ask you some of these questions certainly not under a classified term.

Mr. STRATTON. Well, I think, Mr. Mavroules, what we are doing now is getting the Soviet threat in comparison with their tanks and our tanks. The points that you have raised I have indicated in my prepared statement that we will look into in great detail and that will be in open session.

General MALONEY. Sir, we are very much sensitive to what you said. I would encourage the committee to question in particular the noncommissioned officers who will be here today who are deeply experienced with both the M60 and M1 in Europe.

They are known to me only by the fact that they have been brought from Europe to testify to you. Their instructions are to be absolutely honest, candid and open because we are so convinced that the M1 tank is a fine product and that they will support that. We would welcome your probes.

I would also appreciate an opportunity to respond to a question that might run something like this. There have been many allegations in the press, General. Would you care to comment, the rejoinders. I would be very pleased to respond to that.

I might also say, sir, that we have recently conducted what we hope was a truth session with the media in the Pentagon. We brought them to the Pentagon for a series of briefings and then took them up to Aberdeen Proving Ground to ride in, fire and ask any questions they had of the M1 tank. We believe that was a very positive experience for the media. The most strident opponent seemed to have been neutralized, at least, and published an article which gave a balanced, a little bit negative, but for him a very balanced response concerning the M1.

Mr. STRATTON. Mr. Badham.

Mr. BADHAM. If I might follow along on that same thing. When you said that you had the media over and you gave them a real briefing and they just sat there and just ate the whole thing up, I was going to ask you until you said this, have you ever seen any of it printed since?

General MALONEY. Yes, sir; there have been a number of articles. General Ball has one. There have been several reports on television on cable news network.

Mr. BADHAM. Let me ask you a couple of questions.

Let me ask you about the transmission. The Washington Post tells us, and I hate to use them as my source, that the transmission

won't work, you know, a rocket running in and out and back and forth and that sort of thing. I am also given to understand by the Washington Post, that the fuel consumption is up and we all know that a turbine engine takes a lot of fuel. But is it correct that they don't have an APU on there now? And if it is correct that they don't have an APU, as I recall, one of the arguments against relative mission fuel consumption between the turbine engine, of which I am a fan, and the diesel engine, which we have always had, you know, and all those good things, was that with the turbine engine you start it up and go and when you stop and rest you turn the engine off and then you start it up and go again and then you stop for a while and turn the engine off and then you start the engine up and go again and then you stop for a while and turn the engine off and then you start the engine up and you go and you go back home. You can do that faster for an equivalent shorter time and greater distance, or any way you want to handle that, as long as you have an APU.

Mrs. HOLT. Can you tell me, what is an APU?

Mr. BADHAM. That is an auxiliary power unit without which any turbine engine, be it jet, fan jet, turbo jet, gas turbine engine can't start itself. That is the whine you hear before they start the airplane engines.

Mrs. HOLT. Thank you.

Mr. BADHAM. So if you don't have that, I understand it idles at about 60 gallons a minute, so if you don't have to run it like a diesel to get it started and then you have to leave it idle because you don't have a thing that starts the engine when you are out in the field, would you explain that, first of all, those two things, and beyond that, can you explain those in open session?

General MALONEY. Yes, sir, absolutely, and we welcome the opportunity to do that. We will be very pleased to respond to that.

Mr. BADHAM. Well, do it here now as long as we are here anyway.

General MALONEY. Let me ask the project manager to talk about the auxiliary power unit (APU) which would be like that used on a camper. It is that little generator that you slip in underneath. The same kind of thing. Instead of having to run the main engine of the camper, you run the little generator, and that is the same sort of thing.

General BALL. The APU is desirable. Our cost-effectiveness analysis conducted by the armor community said if they could put an APU on there within a cost of $10,000 per unit that it would be cost effective.

We tested a small turbine that put out 10 kW. The price kept growing and finally it had reached an estimate of $27,000 per unit. I expected it to go higher than that. We tested it and it proved to be quite unreliable. So we have temporarily cancelled, with the concurrence of the user, the auxiliary power unit program.

Incidentially, to find a place to put that, we had to displace 65 gallons of onboard fuel to mount the APU.

As to the consumption, you are correct in that your relative efficiency of turbine is much lower at idle. We consume about 11½ gallons an hour at idle. But the key criterion we are driving to is to

be able to operate through a 24-hour combat mission scenario without refueling to operate a full 24 hours without refueling.

We have demonstrated that the system does not require an APU because of the ease of starting with this turbine. We can run with the batteries charged up and we can operate in silent watch about 2 hours without having to start the engine to recharge.

We still have, as a future block product improvement, an APU. That is out in the future if we can bring the technology along and get an APU that will prove both cost effective and operationally effective for us. At this point in time though we have no firm plans for putting an APU in the tank.

Mr. BADHAM. So my description of the lack of an APU, I was given to understand, is just plain not correct?

General BALL. Well, your figure, unless you were using it for emphasis, was substantially greater than the actual fuel consumption.

Mr. BADHAM. You said you would get 11½ gallons per hour at idle?

General BALL. That is correct.

Mr. BADHAM. So it takes the equivalent roughly of 6 hours of idle to use the fuel that was required to be displaced by the installation of an APU at the cost of $27,000 plus.

General BALL. Yes, sir, and we find that we operate somewhere between 5 and 10 miles per hour on the average when we are operating in a combat scenario.

Mr. BADHAM. OK. Now that makes sense and those are the kinds of things that neither I as a member of the committee or the people that read the Washington Post are aware of.

General BALL. Yes, sir.

Mr. BADHAM. You know, we try year after year to help you folks, and I happen to be a fan of the tank, and it gets hard.

Mr. STRATTON. Why don't we hold this up until we get in open session. How much more do you have on this, General, in closed session?

General MALONEY. Maybe 5 minutes.

Mr. STRATTON. I think it would be helpful, so we could argue these things which the Washington Post ought to learn about in open session.

Mrs. BYRON. Mr. Chairman.

Mr. STRATTON. Yes.

Mrs. BYRON. May I ask unanimous consent to be recorded as voting aye on the motion.

Mr. STRATTON. Without, objection, the gentlelady will be so recorded.

Just 5 minutes and we can get on these other questions.

General MALONEY. Sir, this chart shows the M60, M1 and M1E1 armor protection compared to Soviet high explosive antitank missiles.

Now the first bullet I talked about was the penetrator. It is a dart that is fired very, very fast and punches a hole through the tank. A high explosive antitank missile use explosive energy. You put an explosion up against the side of the tank and blow a hole into it. [Deleted.]

Mr. STRATTON. I remember when we fought out this battle as to whether we should go with the M1 the argument was that we

needed a tank upgraded that would handle all of the Soviet threats in the future. Why is it that we have a situation where you acknowledge that the Soviets may be able to outgun us or outpenetrate us? [Deleted.]

General MALONEY. No, sir, I would not characterize it that way. [Deleted.] We had expected to periodically improve the tank armor.

Mr. STRATTON. [Deleted.]

Let me ask you another question. Does Santa Claus really exist? Is this tank a real tank or is this a notional tank?

General MALONEY. The T-80, sir?

Mr. STRATTON. Yes.

General MALONEY. The T-80 at this time is more than notional. We believe it is beginning to come off their production lines.

Mr. STRATTON. But you haven't seen it and you don't have a picture of it?

General MALONEY. That is correct, sir.

Mr. STRATTON. You don't know how it is configured?

General MALONEY. We have indications generally of how it is configured, but we don't have any detail on it.

Mr. STRATTON. It is kind of hard to go on that basis.

General MALONEY. May I explain how we estimate what that tank is capable of doing. We got the best tank experts in four of the NATO countries, including our own, to independently come up with their estimate of what the T-80 was going to be like based on extrapolations of what we have seen the Soviets do in the past. We then merged these four studies together to come up with our composite estimate of what the T-80 will be.

So, you know, it is not just based on whimsy. There is a logical reason for believing what the T-80 can provide.

Mr. STRATTON. OK. Is this the only other point you want to make in closed session?

General MALONEY. Sir, two more, and let me just flip to those charts.

These are the levels of protection in comparing the M60 and M1 tank against [deleted] antitank rounds.

My point here is that the M1 has far superior levels of protection [deleted].

Mr. STRATTON. Mr. Hillis.

Mr. HILLIS. General, the Wall Street Journal a couple of weeks ago carried an article saying that this ammunition could be produced and given to, I assume they meant Third World countries, and could be fired in older tanks, are the words they used. I assume they meant T-62's. Do you know whether that is true or not? Could you upgrade the ammunition? Has it been upgraded to the point where a T-64 could successfully engage an M1?

General MALONEY. Sir, it is my understanding that the [deleted].

So given that that is the single cannon, any of those projectiles could fit any of those cannons.

Mr. HILLIS. But how many of those are in use outside of the direct Soviet forces?

General BALL. Mr. Hillis, if I could respond to that. [Deleted.]

Technically we can produce rounds, as is evident from the capabilities of our 105 gun ammunition, that have [deleted].

Mr. HILLIS. The final question I want to ask is in the shaped charge, do they have in the individual soldier, in other words, the sagger or the other type weapons, do any of those at this point include a penetration capacity of the M1?

General BALL. Sir, if I could elaborate a bit. From the [deleted].

Mr. HILLIS. Is the airborne weapon launched from the HIND helicopter? Is that the type of delivery system?

General BALL. [Deleted.]

Mr. STRATTON. Mr. Kramer, did you have a question on this?

Mr. KRAMER. Yes. Thank you.

Could you tell me to what extent, and I am sorry if you have already covered this, to what extent you are involved in redesigning now the armor of the tank in order to defeat [deleted] how expensive that is, what the implications of rearmoring this vehicle at this point are?

General MALONEY. Let me cover that, sir. [Deleted.] So it is a cat and mouse game. We are trying to be the cats. We want to continue to step up the armor protection as the threat moves up in its [deleted].

Mr. KRAMER. Can you comment on the cost implications? Tank 440 would be in what timeframe?

General BALL. That will be in the fiscal 1981 procurement. We are at tank 329 now. So that comes in just 3 months. [Deleted.]

Of course we always have armor development programs ongoing in near-term technology and are looking out at longer term technology, none of which are particularly expensive. I don't have the exact cost track of them. I believe I can say that to my knowledge none of the armor development effort has been particularly hampered by a shortage of funds. It is not a fund-driven problem. You can't throw money at it to advance the technology any faster. It is technology driven.

Mr. KRAMER. Mr. Chairman, might I ask one followup question that involves potentially classified information which I am trying to be careful about these days?

Mr. STRATTON. Yes, sure.

Mr. KRAMER. I wrote a letter to the Secretary of the Army several months ago concerning the potential of the so-called super-M60 from, I think, Teledyne. I think that is the company that is making that proposal. Do you have any information as to what the capability of that tank would be in terms of these kinds of numbers up here?

Colonel DONOVAN. May I address that, sir?

General MALONEY. Yes.

Colonel DONOVAN. The answer, sir, is no, we don't have. The proposal that was given by Teledyne was to uparmor the M60 using a type of [deleted] armor that has never been tried. In fact it was a proposal that had sort of a shopping list of about 12 different types of armor, which they had not yet solidified in their own minds as to which one would ultimately end up on the tank. Therefore, one could not say, with any degree of confidence, how that would improve the existing M60.

Mr. KRAMER. Are we doing anything in the way of evaluating that proposal?

Colonel DONOVAN. We have asked Teledyne if they would be interested in providing us with their best shot, one or two samples out of the 12 for us to shoot at. They have gone to their vendor for armor plates and we have recently gotten a positive response back from them. We have requested that the R. & D. lab look at that, not necessarily for application against the M60, but simply for increasing our knowledge of armor.

Mr. KRAMER. Thank you.

Mr. STRATTON. When did Teledyne become interested in armor? I thought they were interested in diesel engines?

Colonel DONOVAN. That is correct, sir, and that is in fact part of the fog involved in this. Their proposal involved some armor that belonged to another company and they were just using the super-M60 as a mechanism for this.

Mr. STRATTON. Well, they are still carrying out their assignment of developing a standby diesel engine, aren't they?

General BALL. Yes, sir, I can address that. The test is continuing. If you recall from last year, as part of the test, we had planned a thousand-hour test on the engine. That test run was terminated at 218 hours of running last September because we had had 51 failures at that point. It has gone back for substantial rework. We are looking to recommence that test later this month. We will squeeze the test in. We want to do the durability test and we will do the two vehicle tests as have been planned from the outset of this program.

Mr. BADHAM. When we had the discussion about the German 120 mm smooth bore, I believe the testimony from the Army at that time was, we don't need a 120 mm anything, either the British, the German, or ours, because our 105 will shoot anything that they have got. Now we are talking about the E1 model having a 120 mm advanced technology round. With that and the up armor in the turret in the M1E1, what do you give up in weight and storage of rounds capacity?

General BALL. The 120 mm German smooth bore cannon and the latest technology that we have in hand is the——

Mr. BADHAM. Well, I assume the 120 that we are going to use on the E1 is going to be our gun, right?

General BALL. We manufacture it, that is correct. It is interoperable with the German. The gun and breech is manufactured in exact compliance with German specifications.

Mr. BADHAM. They have made a lot of improvements in the ammunition, too.

General BALL. The ammunition will be quite substantially improved from the German ammunition. In fact, if we didn't make improvements we would get less performance than we get from our current technology 105 gun rounds. But with the high technology XM829 we will get greater performance than we know how to get from a 105 gun round at this time.

Mr. BADHAM. Then what you were really saying the last time when we had the discussion was that all we could put in the 105 was all we could put in anything today. That was yesterday. Now today with the new 120 you can put more in that than you could have put anything in the 105.

General BALL. Sir, I would say that given the greater diameter, all other technologies equal or equivalent, you will get more penetrating power and greater velocity out of the 120 than you can get out of the 105.

Mr. BADHAM. Now with that in the new turret what do you give up in the number of rounds and weight?

General BALL. You go from 55 rounds stowed in the vehicle to 40 rounds. That has greater volume, the 120. The rounds are about the same length and about the same weight, but for the 120 mm gun we also take on 1.1 tons of additional weight. So we increase the weight of the vehicle. I will plan, if it is satisfactory, to address some of the things we are doing in the open session as a part of the 120 program.

Mr. BADHAM. You give up 15 rounds which is what, about 25 percent? Down from 55 to 40.

General BALL. Yes, sir.

Mr. BADHAM. And we are gaining 1.1 tons in weight.

General BALL. That is right.

Mr. BADHAM. Thank you.

Mr. STRATTON. What about the project improved 105 gun, General?

General MALONEY. Sir, to return to this thesis, we have not gotten all that we can out of the 105. When you compare the 105 and 120, the 120 has greater potential because the kinetic energy projectile is just the application of the physics rule, K equals one-half MV^2, and you can get more energy out of a larger gun. [Deleted.]

Mr. STRATTON. We are not fighting that battle. You have already won that one, but the point as I understand is that the [deleted].

General MALONEY. The [deleted] yes, sir, that is correct.

Mr. STRATTON. Well, the baseline 120 is what we are putting into the tank.

General MALONEY. Yes, sir, that is correct, too. We should continue to improve the ammunition for the 120 and continue to play this cat and mouse game as their armor gets harder and more difficult to penetrate.

Mr. STRATTON. We have redesigned the armor, and although I heard laughter when I mentioned what had happened to the 120 mm gun, we have redesigned the 120 mm gun. We are paying some billion dollars or something or other in licenses to have that gun, but we are really building our own version of it. Is that right?

General BALL. Sir, we have I think licensed $30 million. It is correct that the manufacturing process has been improved. The way the gun tube and breech is manufactured has been improved at Watervliet. But we are manufacturing the gun to be interchangeable, interoperable between the M1 tank and the German LEO. The ammunition is where the greatest improvement is being made. [Deleted.]

Mr. STRATTON. Well, I think we are getting into a lot of this stuff that we should be in open session on. Why don't you finish up the secret stuff, General Maloney, and then let's get into the other, because we simply can't discuss this thing without going into all of the cats and dogs that have been fired at it. If this Christian Sci-

ence article is the only result of your press show, I am afraid you haven't made too much of an impact.

General MALONEY. There are others, sir.

Mr. MCCURDY. Mr. Chairman, may I ask a question about that chart that they have there marked secret.

Mr. STRATTON. Yes. We haven't even had it explained.

Mr. MCCURDY. That is just our number of tanks, right, versus the Soviet's, or is this NATO?

General MALONEY. That is ours versus the Soviet's, Mr. McCurdy.

Mr. MCCURDY. Do you have a NATO?

General MALONEY. I don't have one with me, but the proportions are approximately the same. The difference is NATO versus Warsaw Pact. The proportions stay about the same.

Mr. MCCURDY. Thank you.

General MALONEY. Sir, this last chart shows a numerical comparison between their fleet and our fleet. Please remember that the M60, even the M60A3, our most up-to-date M60, is outmatched by the Soviet T-64, the T-72 and of course the new Soviet tank.

By the end of this fiscal year about 21 percent of this Soviet inventory then will outmatch the M60. By the end of 1990 we think this margin will grow to about 78 percent. We do believe the M1 is superior to all fielded Soviet tanks and at least comparable to the next Soviet tank, and the M1 does have the growth potential to survive and to be a very viable tank to the year 2000.

I might go back for one moment to the 105. We are going to have 105 cannons on this fleet that you see here for a long time. So we should work to improve the 105 cannon and get the very most that we can out of it.

Sir, this completes the classified portion of the briefing.

Mr. STRATTON. Are there any questions on this portion?

[No response.]

Mr. STRATTON. Are you prepared to go into open session?

General MALONEY. Sir, I would like to recommend, if I might, that a great deal of the material that we covered during this portion was in fact unclassified. I would like to propose that information that should be provided for public consumption be put in the public portion of the record. We will be glad to help to screen it.

Mr. STRATTON. Without objection, that will be done because it would be extremely useful to you.

Mr. KRAMER. I have information that even the old T-54 or T-55 is capable of firing [deleted]. Is that true or untrue?

General BALL. Correct; it is capable of firing a [deleted].

General MALONEY. That is the old gun, isn't it, the 115?

General BALL. Yes; that is the 115.

Mr. STRATTON. We will at this point go into open session and our visitors can be readmitted.

[Whereupon, at 3 p.m., the executive session adjourned and the subcommittee proceeded immediately back into open session.]

Mr. STRATTON. General Maloney, you may continue your statement now in open session.

General MALONEY. Mr. Chairman, I am pleased to be here to discuss the track combat vehicle program. Among these I will high-

light the M1 Abrams tank, the M2 and M3 Bradley fighting vehicles and the multiple-launch rocket system [MLRS].

M1 TANK

FISCAL YEAR 1983 R.D.T. & E. REQUEST—$85.9M

FISCAL YEAR 1983 WEAPON SYSTEM PROCUREMENT REQUEST—$2,025.0M

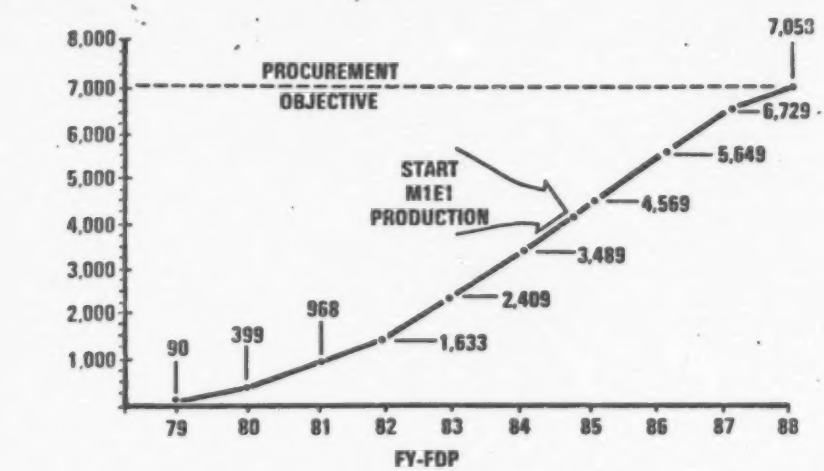
Army's primary offensive weapon.
Replace M60 series tanks in selected units.
Fiscal year 1983 fifth year of production.
Total buy—7,058.
Procured through fiscal year 1982 FDP—1,633.

Our M1 budget request for fiscal 1983 and the current program status is as indicated on this chart.

M1 TANK BUDGET REQUEST

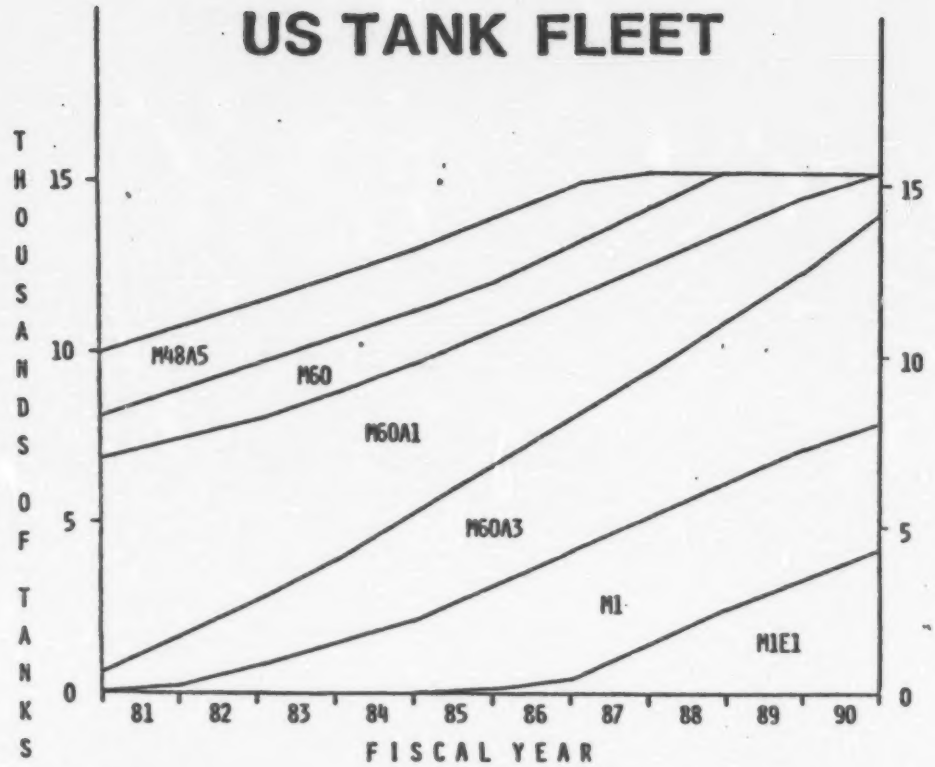
The budget request of a little over $2 billion fully funds the 776 M1's along with their initial repair parts. It also funds the advance procurement needs for fiscal year 1984. Our R. & D. request funds the continued development of the M1E1 with the 120-mm gun.

M1 TANK PROCUREMENT OBJECTIVE



The program for meeting the M1 acquisition objective is shown on this chart and reflects production assumptions based on our current budget request being approved along with the tanks we will seek funding for in subsequent years.

This program also supports the current production plan which is to produce 60 tanks a month beginning in November of this year and 90 tanks a month beginning in February 1985 to program completion.



The objective is to improve the current fleet of tanks at the same time as the M1 is coming on line. We will continue to depend on the improved M60A3 for many missions. As you can see from this chart, we plan to use this dependable battle tank for many years to come though there is no new M60 tank production for the Army in the fiscal year 1983 budget.

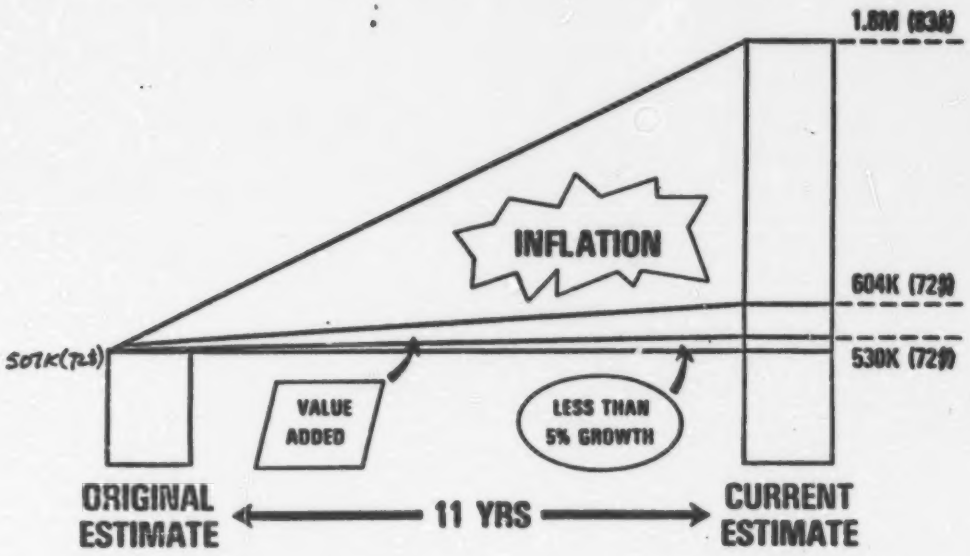
All tank production M60's that is, will be the result of foreign military sales [FMS] after June 1983. Based on current orders, deliveries for the FMS program will continue through December 1983.

Now let me turn, sir, to M1 cost. In your opening statement you asked for a complete account of factors or circumstances which have caused the price tag on the M1 to increase since the committee was briefed last year.

I am very pleased to inform the committee that the total price tag for this program is $1.5 billion lower than our testimony given to this committee on March 18, 1981.

There has been a great deal of discussion of cost of the M1 tank, a great deal of discussion in the press in particular. I would like to discuss unit costs with you. I would like to put in perspective the cost history of the M1.

M1 HARDWARE COST



In 1972, sir, we signed a pact, so to speak, with the Congress, to produce an M1 tank for $507,000 in fiscal year 1972 dollars. That price has gone up to a price today which is 5 percent above that established in 1972, and for that 5 percent change in price the Army is liable for lapse in management. Above that 5 percent delta there is another 14 percent tacked on to the price. That 14 percent is value added to this program.

For example, we did not know back in 1972 that we were going to go to a 120-mm gun. We did not know in 1972 that we were going to have a different NBC protective system for the tank. We cranked these things in, with the full concurrence, of course, of the Congress, and that added 14 percent to our cost.

Mr. STRATTON. Not the full concurrence. While you are on this, how much did the decision to go to the 120-mm gun and the turbine engine actually add to the program?

General MALONEY. Well, the turbine engine, sir, was in the program from the beginning.

Mr. STRATTON. No; it wasn't in the program. It was a low-risk technology vehicle and the turbine engine was not a low-risk, mature engine, in spite of what the Army said. As soon as they conned the Congress into going for these changes on the basis of a mature engine, they asked $30 million for testing.

So, what I think we need to do, in all honesty, is not to try to play games but to put out on the record how much that decision cost.

General BALL. Sir, if I could show the next slide.

Mr. STRATTON. Why don't we leave the other slide on there because you were just explaining that little green section.

General BALL. The 1972 estimate and 1972 dollars was $45,000 per engine. There never was a $45,000 turbine engine in 1972.

Mr. STRATTON. What I am saying is you are getting into this question of the increase in the cost of the tank. You were mandated by the Congress that this was to be $570,000 per copy in 1972 dollars. What I want to know is how much over that figure this change which was directed not by the Army but by the Secretary of Defense cost the Government and cost the taxpayers both in terms of unit costs and in terms of program costs.

General BALL. I can address the specific cost of the turbine, but the cost of the turbine is a part, and such cost increase as it might have caused is a part that is included within the 5 percent growth above the threshold of $507,000.

Mr. STRATTON. Well, it is a lot more than 5 percent. I think you had better go back and get the figures on that, General, and let us have them. I don't think there is any point in trying to guess at them.

The gun itself added, I think it was $1 billion the last time we figured and I think it has gone up to $2 billion, and the turbine has had nothing but headaches and all of the revisions, reconstructions, amendments, and so on and it is still in the process of being upgraded.

General BALL. Sir, I will provide for the record, if I may, the specific cost.

Mr. STRATTON. I don't want to get it in the record. I want to get it in open session. If we have to have another session for you to provide it, we will do that, because this is a good way to hide it from the public, just put it in the record and nobody ever reads the record and that is it.

General BALL. I can address what it was in 1972 dollars. In 1976 in the proposal it was $115,000 per unit. The current cost of the turbine engine is estimated at about $360,000 per unit in inflated dollars, fiscal 1983 spend-out dollars.

Mr. STRATTON. Well, I want to see the chart and I want to see the total program costs that resulted from that. Since you haven't produced your 7,000 tanks, it is still included. We are still living with the impact of these changes.

Mr. MAVROULES. Mr. Chairman.

Mr. STRATTON. Yes.

Mr. MAVROULES. Mr. Chairman, could I generalize on your piercing questions, if I may, and just ask a general question at this point.

Mr. STRATTON. Go ahead.

Mr. MAVROULES. One of the reasons for it is that I do have another appointment at 3:30 but I want to get this out in the record.

Right now you are receiving a negative impact across the country and, certainly, among the American people. But I think there are more questions to be asked rather than just the cost of a tank. I think what we ought to be doing is asking questions relative to the quality and the qualitative aspects of the tank itself perhaps in competition toward the adversary.

What are you doing as a group and as a military department to improve your image, because quite frankly, as I stated to you in executive session, General, I think you have your problem handed to you across the country from one end to the other. I don't think your problem is so much with Members of Congress or the Procure-

ment Subcommittee. I don't think it is. We are going to ask you some real hard questions. But I think your problem right now, imagewise, is in the press and throughout the country as to how you are perceived.

Let me tell you I go back every weekend and people talk to me about defense spending. They talk about all kinds of things, including the M1 tank. To be very honest with you and candid with you, I do not have the proper answers to answer my people with now.

Let me just ask you some questions and maybe you can respond to them. I think it will cut across a lot of other questions coming up later on. Keep in mind that I want the American military person to have the best equipment possible for their own protection and our own national security. If they are totally unclassified, you can answer them, and you feel they are classified I would imagine you would withdraw.

The Soviets now are developing a new tank, I believe it is called the T-80. How does that compare to the M1 or vice versa, how does the M1 compare to the T-80, and how does it compare to the M60A3? That is one question.

How does the M1 compare to the generation of Soviet tanks now fielded and how does to M60A3 compare to the Soviet tanks now fielded?

Do we have a quality tank that will be good in competition? Can we build it within means, within a budgetary system that is effective and efficient?

What kind of promise can you give the American people, not only Members of Congress but the American people that we are doing the right thing with the M1 tank?

If you could answer those questions, I would be most appreciative.

General MALONEY. Sir, I appreciate this opportunity to respond. The Army has been very much concerned at the unprecedented media attack on the M1 tank that has occurred in recent weeks. We would characterize much of that attack as being based on incorrect information, innuendo, selective reporting from test reports that are out of date with no balancing of that information.

We have been terribly distressed by this. Our responses have ranged from letters to the editor, which have been in some cases honored and in other cases simply ignored, to open house for the media, which occurred last week at the Pentagon to describe, warts and all, the M1 tank and to let the members of the media who were inclined to be there not only to listen to spokesmen concerning the tank but to talk with noncommissioned officers and soldiers from the field who have operated this tank and to go to Aberdeen Proving Ground to fire and experience the M1 tank and look at it in comparison with the M60.

So we are terribly concerned at these what I would characterize, in some cases, as scurrilous attacks on the M1.

Now by Constitution the Armed Forces cannot propagandize, and certainly we do not want to get around constitutional constraints. But we certainly welcome any opportunity to provide to the public and to the press what we believe to be the truth concerning the M1 tank.

You asked a series of questions and I will try to address those as best I can. We will then talk about press in Europe on the tank. But let me make a few more points.

How do we compare this tank, the M1, and the M60 with the Soviet tanks. Let me talk about the M60 first.

This Nation has about 11,000 tanks in its arsenal right now. The majority of these tanks are M60's. They are in various configurations, including our latest configuration, the M60A3. This has up-to-date fire control and it is a good tank. We will have M60's in our inventory until the year 2000 and possibly beyond. So we will be continuing to improve this fine tank.

This tank is not a match now for the Soviet T-72 and T-64, some versions of the T-64 tank. Right now a significant percentage of the Soviet inventory of tanks outmatches the M60 tank. That is a fact.

The Soviets, incidentally, are not standing still. Their inventory of tanks is almost 50,000, and they continue to build tanks at a rate of two to three times the rate of production in this country. When we look ahead we see the same ratio existing. So they are continuing to produce at an increasing rate tanks which are superior to the M60A3 tank.

Now let me address the M1. We are now in full production with the M1 tank. It is better than any fielded Soviet tank and we believe the M1 will be a match for the next Soviet tanks sometimes referred to as the T-80. The M1 is a fine tank, much malined by critics whose motives I seriously question in the press.

This is a high-quality tank that we are fielding now. This tank had some difficulties as it went into early production and, of course, as we go through testing we select first prototype models for tests and later the very early production models for tests. We conduct the tests to find out what is good about the tank and what is bad about the tank. We then fix what is bad that we find. We do not get credit in many quarters for having fixed the things we find wrong.

For example, one attacker of the tank said the machinegun mount falls off, or the machinegun mount breaks. That comment appeared recently in the press. In fact, 2 years ago, there was an incident of a machinegun mount for the 7.62 mm machinegun on the left side of the tank breaking. We fixed it. That problem has not recurred.

We hear many, many other criticisms. For instance, we hear the M1 tank costs three times as much as the M60. That is false. We purchased M1 tanks and M60 tanks in 1981. We paid for the M60A3 tanks $1.3 million. We paid for the M1 tanks $1.7 million. So the M1 on an apples-to-apples basis of comparison, the best basis we could find to make this comparison, is not much more than the price of the M60A3 tank.

We read in the press the M1 breaks down every 48 miles. That is garbage. As we test the M1 we look at everything that goes wrong with the tank. If a seat cover is torn, if rubber chunks off the road wheel, if we note that there is contaminant in the lubricant in a road wheel, or if the engine breaks down and the tank stops, we note each one of those incidents. If you take all of those incidents and divide them by the miles run you will get a figure that runs 43

in some tests and 48 in other tests. It is getting better, by the way. This is an interesting figure. This tells us that we have to have repair parts and we have to improve the rubber on the road wheel and things of that nature.

Mr. STRATTON. General, let me interrupt you there a second. You say that these charges that appear in the press are all garbage.

General MALONEY. No, sir, that particular one.

Mr. STRATTON. The charges that appear in the press are based upon a report by the General Accounting Office, and I don't think it is proper to suggest that those are garbage. Those reports are based on the Army's own documents of when the tank breaks down and they have made a number of changes. They may not be fighters over there in GAO, but I have had a lot of experience with them and they refute your statements out of your own documents. I don't think it is proper to suggest that this is just press garbage.

The reason these charges have been focused on in the press is that the GAO quite recently issued another one of these reports and those reports have factual basis to them.

General MALONEY. Mr. Chairman, I should not have selected that word. I certainly do not intend to impugn the integrity of GAO. In fact, the 48 miles comes from an Army report.

My point is that in certain press accounts that number has been taken out of context. It has been repeated in other press accounts and the general public gets the impression that this tank has to stop and cannot perform its combat mission every 48 miles. That is not correct.

In fact, this tank, the expectation, the standard we set for the tank, is to achieve 320 mean miles between failures concerning the performance of its combat mission. It achieved 350 mean miles between failure. We believe this is a much more correct and accurate way to examine that particular parameter than what came through from the press.

Mrs. HOLT. Mr. Chairman.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. I wanted to bring up a couple more subjects that have been discussed frequently in the press.

One is ACE and the M9. There is no request for funds in 1983 or 1984 for those items.

Then also the fuel consumption, which is another thing that we hear about. The M1 uses about 4 gallons of fuel to go 1 mile, and what kind of fuel tanker requirements will there be?

Would you discuss those two?

General MALONEY. Yes, ma'am, I will be pleased to.

There is an allegation again that has appeared in the press that the M1 needs the ACE as a nursemaid. That is not correct. The ACE is intended for procurement under fiscal year 1982 authority. We intend to buy the first year's worth of the ACE vehicle, test it, and then go out competitive for a procurement of 1,300 to 1,400 ACE vehicles in the future. Our programing documents have shown this to begin in 1985 and carry through 1986 and 1987. In fact, we are proposing now within the Army budget process that we begin to buy the ACE vehicle in 1984, 1985, 1986, 1987, and 1988, a 5-year multiyear procurement.

First of all, why do we need the ACE? We need a combat earthmover to do bulldozer kinds of tasks throughout the division zone. We intend to buy about 25 of these per division. They will support not only the about 350 M1 tanks that you will find in a division, but they will also support the more than 300 fighting vehicle systems, many trucks, they will support river crossings, they will dig antitank ditches, help to make obstacles, and do general earthmoving kinds of tasks.

So it is certainly not being bought just as a nursemaid to the M1. It is for general purpose.

Now why do we not simply buy a standard commercial vehicle? We don't do this because the standard commercial vehicles can move at a speed of about 5 miles per hour unless you buy a lowboy to go with them, and then that is a little difficult to trundle around the battlefield.

The ACE will have armor protection for the crew, which the standard vehicle, of course, does not, and will have the capability to go at about 30 miles per hour. So it can move with the division as the division fights.

So the allegation that the M1 needs an ACE is simply not correct.

Additionally, we have a dozer blade on one tank per company, the M60 tanks. That dozer blade is not a digging kind of blade. It is more of a scraper. We intend to have a dozer kit, a blade kit, for one M1 tank per company as well. This will help in light earthmoving and scraping tasks and clearing obstacles and that kind of thing with each tank company.

Mrs. HOLT. What do the Soviets do for that kind of thing?

General MALONEY. Ma'am, on their T-64's and T-72's they have a blade that drops down. It is in between the tracks. It is a fairly simple mechanical device that drops down and then sticks a few inches into the soil and they simply power ahead and scrape earth away and then they move back and repeat this. They make a kind of a "Z" motion as they move back and forth. They have that on all of those tanks, not their entire fleet, but on all of their T-64 or T-72's I believe. So that is their answer.

I don't know whether they have a combat earthmover. I know that other countries do. For instance, the British do and I believe the Germans do.

You asked a question about fuel, ma'am. The M1 does use more fuel than does the M60. The M1 weighs about 5 percent more than the M60. The M1 has a 1,500-horsepower engine as compared with a 750-horsepower engine on the M60 and it comes as no surprise to us that the M1 does require more fuel, and in a combat scenario certainly we expect the M1 to use more fuel than does the M60.

Mrs. HOLT. What is the percentage more? How much more?

General MALONEY. In the combat scenario crosscountry the M1 uses about twice as much fuel as does the M60. Now on the road the proportion is not as great.

Mrs. HOLT. What is that going to do to our tanker requirements?

General MALONEY. Ma'am, the press has stated that we are going to need 16 more tank trucks per battalion. That is not correct; we will need either 5 or 6; 5 more per battalion.

Now I should also tell you in candor that we are going to need four more ammunition trucks per M1 battalion because we download some of the ammunition and we carry that on trucks. But in both cases we have sufficient truck lift for ammunition and fuel to support the M1. We knew this was coming. We very much accepted this as a price that should be paid for the approximately two to three times increased combat capability of an M1 as compared with an M60. So we think the price is generally worth it.

Mr. STRATTON. General, were you the project manager of this system at any time?

General MALONEY. No, sir.

Mr. STRATTON. General Ball, how long have you been project manager?

General BALL. Since July 1980, sir.

Mr. STRATTON. Who was project manager before then?

General BALL. General Babers.

Mr. STRATTON. Where is he now.

General BALL. He is commander of the Communications Electronics Command at Fort Monmouth, N.J.

Mr. STRATTON. As project manager, have you had anything to do with the Germans with respect to this tank since you took over?

General BALL. Sir, yes is the answer to the question. We have a joint interoperability group, the executive group, which I cochair with a German counterpart.

Mr. STRATTON. Are you familiar with the German view of the fuel-consumption situation on the turbine engine?

General BALL. No, sir; I do not have firsthand knowledge of the German view.

Mr. STRATTON. To your knowledge, did General Babers ever get the briefing from the Germans on their view?

General BALL. I believe there was interchange at the time the Germans were considering the turbine engine for the LEO tank.

Mr. STRATTON. Do you have that in the record? Do you have a verbatim account of it?

General BALL. Yes, sir; I am sure I can find out any exchanges that took place on fuel consumption.

Mr. STRATTON. You are aware that the original memorandum of understanding required the Germans to take the turbine engine while we took the 120 mm gun, and that has not been carried out, has it?

General BALL. No, sir, they did not accept the turbine engine.

Mr. STRATTON. Do you know why?

General BALL. My understanding is that fuel consumption was one of the reasons given for not accepting the turbine engine.

Mr. STRATTON. If you have that report, I would like to get it entered into the report.

General BALL. Yes, sir.

[The following information was received for the record:]

FUEL CONSUMPTION REPORT

The information requested concerning the German decision not to use the turbine engine in the LEO 2 has been extracted from a 7 January 1980 message from the Federal Republic of Germany, Ministry of Defense, Mr. Eberhard.

"* * * the adoption of the AGT 1500/X1100 power pack for full production of the Leopard 2 tank for deliveries to the German Armed Forces cannot be considered.

The essential, decisive reasons are roughly summarized as follows: The fuel consumption is too high when compared to an equivalent diesel power pack on a 24 hr battle day; there is no functional electrical auxiliary power unit available for full production, or could be tested as a built-in component; not all the changes that were made after OT II can be viewed as mature for full production; the envisioned life expectancy, which has to be considered in relation to the procurement and maintenance costs, has not been positively proven; the possibility of a licensed production in the Federal Republic of Germany is not assured; the performance of the transmission at pivot steer is unsatisfactory; the braking system does not comply with the German traffic codes (STVZO).

The braking system could only be evaluated on the basis of the Kiel results: here we saw a substantial risk, on the basis of these tests, it cannot be determined whether the German Ministry of Transportation would grant a special permit.

In addition to the above mentioned decisive reasons, questions with regard to the deep-fording capability of the gas turbine power pack and retrofit effort for the fielded Leopard 2 tank would have had to be considered from the design viewpoint.

However, we did not weight these items, since we are well aware of the fact that certain additional expenditures have to be accepted in the name of harmonization.

I am confident that you will understand our carefully considered decision."

Mr. STRATTON. Excuse me, go ahead.

Mrs. HOLT. I am through.

Mr. STRATTON. Mr. Mavroules.

Mr. MAVROULES. I just have one final question, Mr. Chairman.

Could you, General, articulate for us the differences between the M60A3 and the M1 tank relative to pre-positioning, maneuverability, and overall operation? Let's stop comparing with the Soviet tank at this point and let's compare between the M60A3 and the M1 tank.

General MALONEY. All right, sir.

Mr. MAVROULES. Let me go one step further. Let's assume Congress would take a bold step and say to you, you can't have any money for the M1 because it is too expensive. What is the alternative to that? Now if you can answer that for me I would be very pleased.

Mr. STRATTON. Turn and run like hell. [Laughter.]

Mr. MAVROULES. I know, Sam, but I want the General to have this opportunity.

General MALONEY. Sir, I cannot conceive that the Congress would do that——

Mr. MAVROULES. Neither can I.

General MALONEY [continuing]. In view of the need for this tank when one compares it with the Soviet tanks. I must suggest that we should look not at the relationship between the M1 and the M60, but the relationship between Soviet capabilities and United States capabilities.

So I really think that the more important comparison must lie there. We must let equipping our force be impacted by what the Soviets are doing rather than whether the M60 and the M1, is one better than the other.

But let me draw what comparison I can.

First of all, in the overall sense, our games and studies in the aggregate show that the combat contribution of the M1 makes it worth about two to three M60's. This comes from a number of factors.

A primary factor is survivability. The M1 is built in order to be survivable, and this was the No. 1 condition for its development. It was our first priority.

It has, for example, compartmented ammunition storage so that if the ammunition area is penetrated and the ammunition blows, the crew survives. The survivability we are talking about is of the crew. So the crew survives.

If there is a fire in the rear or in the troop compartment, there is a fire extinguisher system which is very similar to those we use in ammunition plants where an infrared sensor watches the possible hotspots and, if fire appears, instantaneously floods that area with halon gas to snuff the fire. That happens in the engine compartment as well as the crew compartment.

The location of hydraulic systems, for example, is deeper in the hull and thought was given to keeping them away from any penetrating rounds. So they are better protected than in the M60.

I might mention a concern that is seen in the press that our hydraulic fluid is flammable. We use a hydraulic fluid now which is the best that we have been able to find and which is less flammable by far than the hydraulic fluid that was used in our M60 tanks during the 1973 war employed by the Israelis.

So we are using the best balanced hydraulic fluid we have found, but we are certainly open. If someone has a better fluid, we will test it, and if it tests out we will buy it. But, anyway, the allegation is not correct.

Mrs. HOLT. Mr. Chairman.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Could I ask Colonel McVey, because he has had a lot of experience with this, to respond to how he deals with some of the criticisms that we have to deal with every day.

Colonel MCVEY. Well, first of all, Mrs. Holt, we don't get that kind of criticism about the tank in Europe. I read the reports over here. We get Die Welt that picks up what is in the press and it comes out in the German press.

Mrs. HOLT. Well, you know what the criticisms are, and how do you respond to that over the 8 years or so that you have been involved with it?

Colonel MCVEY. First of all, I think that when we read it, and I deal with the tanker and the soldier, it is obvious to the tanker who has been on that tank that the person who is writing the article doesn't understand tanks to begin with. You know, how they use them, because there are things that maybe we become accustomed to in tanks that don't seem to bother us.

Mrs. HOLT. Like what?

Colonel MCVEY. Like a circuit breaker on a tank can go out and you report that your tank is down. Well, then you go by and you check it out and you flip a circuit breaker and you are operational again. Or a printed circuit board burns out. Well, we have got PLL, which is the prescribed load list, parts. We carry that with us. You go through and you check out the tank, you identify what is wrong with the built-in test equipment and it will normally tell you, or you throw on the test set or do alternate troubleshooting procedures and you find what component is wrong and you pull that component and you put it on a test set and it says it is your A-1

card in your power control unit. You take that card out and you put another one in and within 30 minutes you are operational again.

So the tankers say, well, that is no big problem. As long as we can continue to move and become operational we will do it. So from that frame of reference the tanker says those writers don't know what they are talking about.

Mrs. HOLT. What are their criticisms though? They must have some gripes about it?

Colonel MCVEY. I think that question could probably be better addressed to Master Sergeant Kinney and Sergeant First Class Corkran who live in those tanks.

Mr. STRATTON. Do you want to answer Mrs. Holt's question there, gentlemen?

Sergeant KINNEY. Yes, sir; there are some criticisms. They are not big problems. We have things that are wrong with the M60 as well as the M1 tanks. For example, we will have a part or a component within the tank. It will go out and it has got to be pulled and it has got to be changed.

The tanker feels that any time something has to be changed, he doesn't like that, but he doesn't like it any more with an M1 than he does with an M60. But it is much easier to repair it with an M1 than it is with an M60. The mechanic can get in there and change the part in just a couple of minutes. When he has got the new one he puts it in and he is ready to go again.

Yes; there are things that could be better. But the M1 right now is so far past the M60 that if we ever go to combat I want to go in an M1.

Mrs. HOLT. How about the fuel consumption, is that a serious problem?

Sergeant KINNEY. No, ma'am; it uses more fuel than an M60 does, but with the maneuverability that we have cross country we can move across country at pretty good speeds, 35 or 40 miles an hour, and engage targets at those speeds. That is going to allow us to keep from getting hit, and if we do get hit in the M1 at least we are going to survive or have a better chance of surviving than we do with the M60.

We don't even think about fuel consumption as a tanker. We don't care.

Mr. STRATTON. You don't have any instrument that indicates the level of fuel? You mean you don't watch your fuel gages?

Sergeant KINNEY. Sure, we watch our fuel gages.

Mr. STRATTON. How far can you go on a tank load of fuel?

Sergeant KINNEY. In a cross-country movement where you are moving through mud and everything?

Mr. STRATTON. Well, I mean in a typical engagement. I mean it isn't just a racetrack. I think one of these generals said you could go for 24 hours without refueling. I don't know how long the tanks that were engaged in the Yom Kippur war spent out on the battlefield, but there were several places where literally hundreds of them were burned up, but I don't think they automatically stopped at 24 hours and went back and got fuel.

What is your ordinary combat patrol, or don't you simulate that over in Germany?

Sergeant KINNEY. Yes, sir; we do simulate combat, and normally we do a refueling daily and it is normally done at nighttime in a defensive position and then you await further orders for a movement into whatever it is that you are going to do. But we try and fuel daily. Normally during the day's operation you still have more than half the fuel that you have been using onboard.

So I really don't know exactly how many miles it will go without refueling because we have never run into that situation in the field. We top off every night.

Colonel MCVEY. That is standard practice in every battalion. Any time you get a chance to refuel you will do it because you never know when you are going to have to run for long periods of time.

Mr. STRATTON. Mr. Hillis.

Mr. HILLIS. Sergeant, in a field use, and you talked about these different things that come up, is there any pattern of things that you can point to that is happening to this tank in the way of maintenance? Is there anything that you see or that other people around you who are using it talk about that it doesn't seem to be strong enough?

Sergeant KINNEY. Yes, sir; there are some things that need improvement. The commander's weapon station, most of the tankers feel needs vast improvement. At this stage of the game it is about like an M60A1 was. It requires manual dexterity. You have to crank around and try and work the gun control for moving the commander's weapon station. That needs improvement, as it did with the M60. With practice it can be utilized now, but we need a better commander's weapon station.

Mr. HILLIS. Is there anything else you could point to?

Sergeant KINNEY. We have identified certain problems with some of the electronics we had failures with, like the power control units for the thermal imaging system where we have problems with those. They had a higher failure rate than what we thought they should have in the field, but they are corrected right away. Say, we are using the thermal imaging system and we have the power control unit that goes out. It is corrected right away, but we feel that they are going out too fast.

I have 11 years experience with M60's and M60A1's. The thermal imaging system on the M1 works every bit as long, the way it is right now, as the IR's and the passives did with the M60's.

Mrs. BYRON. Talk in layman's language.

Sergeant KINNEY. The infrared nightsight the M60 tank uses for night didn't last as long as the thermal imaging system does on the M1 now. The thermal sight we can use during the daytime to see through the fog. With the IR on the M60 you couldn't. If it was foggy out you could forget it. You just couldn't do anything. You could not fire. But we can now.

The training in Vilseck, the 7th Army Training Center in Grafenwohr, the 1st Company was there calibrated in the fog. You couldn't see 500 meters, but those tanks fired through the fog, were calibrated and went and fired ranges. That is how they were zeroed and they did pretty good, too.

Mr. HILLIS. You are telling the committee then that you don't see any major problems and you don't see any major systems that are causing the field use to be not satisfactory?

Sergeant KINNEY. What I am saying is there are things that could be better. But the way it is right now it is better than we could ever hope to have with M60A1 series vehicle. It is more reliable right now and it is getting better all the time.

I have watched the M1 for about 2 years now that I have been with the M1 tank and it has continued to get better the whole time.

Mr. HILLIS. Are there any tranmission problems that show up?

Sergeant KINNEY. We have one transmission that we had a problem with. Since the battalion took the tanks in Germany we have had one bad transmission. We had three companies that went approximately 400 miles per vehicle, between 300 and 400 miles. They did a 90-kilometer road march and not one tank broke down in all three companies.

Mr. HILLIS. Thank you.

Mrs. BYRON. Mr. Chairman.

Mr. STRATTON. Mrs. Byron.

Mrs. BYRON. I have a couple of questions.

How long ago did they take the tanks in Europe?

Colonel MCVEY. We went over July 9 and trained the cadre and we started training the 1st Battalion on the 15th of January.

Mrs. BYRON. So you are talking about an 8-month period?

Colonel MCVEY. Well, actually, Mrs. Byron, from January 15 until the 27th of this month.

Mrs. BYRON. So we are talking about a 2-month period.

Colonel MCVEY. It is about 68 days.

Mrs. BYRON. When you talk about three companies, you are talking about——

Sergeant KINNEY. Three companies of the 1st M1 Battalion have finished their training.

Mrs. BYRON. You are not talking about a long period of time.

Colonel MCVEY. To put it in perspective though, in that 2-month period we take four companies, and there are 14 tanks in a company plus 2 in the headquarters for a total of 58 tanks plus 5 float tanks, and we take the crews through their individual station and all the mechanics and put them through a very intensive training program. They go through crew drills. Then from the 18th day of training until about the 38th day we run those tanks 24 hours a day. So they really get exercised.

Mrs. BYRON. So actually you are really using a heavier intent on the tank per tank as in a normal scenario.

Colonel MCVEY. I would say in those 2 months that tank is exercised more than you would for 6 or 8 months of normal use.

Mrs. BYRON. Let me follow that along and ask what is the relation of the mean miles between failure and the amount of time required to maintain the M1 versus the M60?

Sergeant KINNEY. Ma'am I am sorry, I don't know what the mean mileage is between breakdowns.

Mrs. HOLT. Say it in layman's language.

Mrs. BYRON. Well, between breakdowns. Oh, you mean I have got some language you don't understand? Good. [Laughter.]

Sergeant KINNEY. I don't know what that information is. I don't keep track of how many for a fleet-wide, you know.

Mrs. BYRON. Let me ask you about the ones you have been involved in. Do you find the M1 is taking you less maintenance hours than it would for the M60 even though you have got a new tank that has just come into your inventory so, therefore, you are not doing your maintenance as you will once you get the routine?

Sergeant KINNEY. Yes, ma'am; right now we have fewer problems. From my experience with the M1's and the M60's, we have fewer breakdowns. It is not only myself that feels this way about the capabilities. It is all the tankers that have them in Europe.

I also brought a newspaper from the 3d Infantry Division with me from the people that use the tank, not only myself but some of the privates and specialist 4's who use the tank and what they feel about it. I would like for you to have this and see what they think.

[The following information was received for the record:]

Sound off!

'How do you like your new M1 tanks?'

Sp4 Richard Duncan, 'A' Company 3/64th Armor

"The M1 has greater maneuverability and survivability. We are spending a lot of time on maintenance. The training has been hard but good. They keep us busy."

Sp5 Jesse Blas, 'C' Company 3/64th Armor

"It's a lot more advanced than any armor I've seen. I'm a gunner and every round I've fired has been a firstround hit. It's a fast tank and it's easier to shoot when you're moving."

Pv2 Irvin Brown, 'C' Company, 3/64th Armor

"I think it's a nice machine. It has more armor and it's fast, too. I've had it up to 45 mph on rough terrain.

The ride was a lot smoother than the M60's were when they were only doing 20mph.

Sp4 Jay Hagerbaumer, 'B' Company 3/64th Armor

"I like the M1. I'm a driver and I find the seat much more comfortable and the track suspension is better. It's a much better tank."

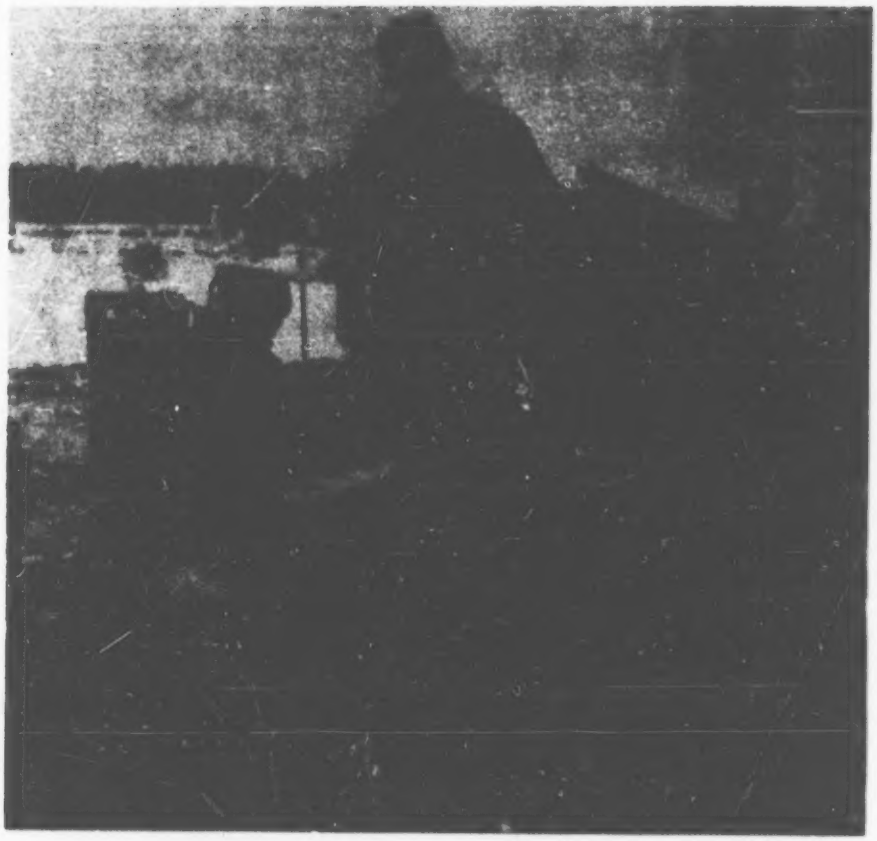


Photo by Hawkinson

SFC James Posy (standing) of the Cadre gives an M1 Maintenance Class to SSgt. Joseph Williams, Sp5 David Burns and Sp4 Lewis Rosado of A Co., 3/64th Armor

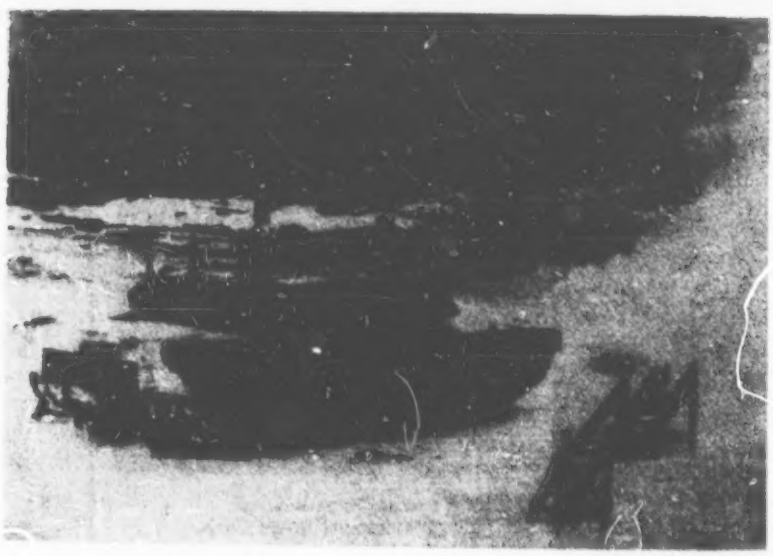


Photo by Ralph

There isn't anything a tanker loves more than 'putting steel on steel'!

by Ken Hawkinson

It's here! After years of planning, building and controversy, the Abrams M1 tank has arrived at its first permanent home here in Schweinfurt. (While there is a unit at Fort Hood which has the tank, they received it originally for testing. Schweinfurt's 3 Bn. 64th Armor is the first line unit in the world to receive the tank).

Ever since last summer when the battalion went into its Division 86 configuration, 3/64th Armor has been preparing for the tanks. At that time, CSC Company was absorbed by HQ Company and Delta Company was formed. This meant that the battalion gained an additional maneuver company.

Since the configuration, the men of 3/64 have been hard at work preparing for the arrival of the M1. First they had to turn in their M60s and then they had to begin training to familiarize themselves with the Abrams tank. In the Fall, the mechanics went to Vilseck, the center of all M1 training, and were instructed in how to detect and fix any maintenance problems. Then, this past January, each company began to rotate to Vilseck to be trained in all aspects of the tank.

The five phases

The training consists of five phases. In the first phase the soldiers are given classes in safety procedures, maintenance, driving and position training. Position training is when all crew members learn the role of driver, gunner, etc. The whole crew is cross-trained to do each other's job. A lot of time is spent on driver training. According to SSgt. Hugh White, a member of the Cadre, "There is a lot of difference between driving an M1 and driving an M60. The M1 has touchy brakes but it is twice as powerful, faster, has better suspension, and has an all-around smoother drive." One soldier simply said, "It drives like a Cadillac — smoooooth!"

In the second phase the crew learns how to operate the gunnery system. SSgt. Daniel Keyes, 'B' Company, 3/64th Armor, points out "The M1 is a lot easier to shoot. If I have to be on a tank, I'd rather be on an M1."

Crew drills turn the four individuals on the tank into a team in the third phase. "Crew drills are to get each man competent in his job and to have them all work as one", explained PFC Craig Warner of 'C' Company. "If one man acted as an individual, the tank couldn't function. Each man plays an important part in the crew, and if he fails, the whole crew fails."

The fourth is the gunnery phase. This involves zeroing the main gun and machine guns and then actually firing in both stationary and moving positions, day and night. This phase is what being a tanker is all about . . . putting steel on steel! Pvt. Francis Gosser III of 'C' Company talked about his job as a loader. "I load and make sure all weapons are clean and ready for combat. I have been training on the M1 since Basic Training. They told us there that we would be the first to work with the best tank in the world and that all eyes would be on us. I think we have proven that the best tank is with the best unit."

The last phase has each company taking part in a Field Training Exercise at Hohenfels. Here the tankers practice tactical movement and tasks such as defense, movement to contact, offensive procedures and night movement. The objective is to bring the tank crews up to proficiency in battle drills so they can appreciate the increased maneuverability of the vehicle. Sp4 Martin Helget of 'B' Company points out, "It's a better tank! It's more sophisticated, has better suspension and maneuverability. I feel a lot safer in it.

The Tank

The tank itself is an amazing piece of machinery. Capt. Owen Pitney, S1 of 3/64th Armor, explains the enhanced capabilities, "The Abrams tank is far superior to any tank in the US. Army's inventory today. With its 1500 hp turbine engine it can move cross-country in excess of 35 miles per hour, whereas the M60 series tank moved at approximately 25 miles per hour. The new armor and tank design greatly improve crew-survivability. High technology component systems and improved stabilization give this tank the unique capability of shooting accurately while on the move. In the past, tanks had to stop to be assured of accurate gunnery. It is also known as the most throughly tested piece of equipment in the Army today."

What does this mean to the Commander? Capt. Joe Celeski, Commander of 'C' Company explained, "Having the M1 means that as a CO, I have a more reliable, easier to work on, and therefore, more effective tank." Celeski went on to explain some of the mechanical improvements. "The M1 is easier to do maintenance on. There are 70 percent less tools needed and 50 percent less Preventive Maintenance checks. Before, with the M60, we had to manually check things like oil and fluid levels, while now we just look at a light board. If the tank goes down, the engine can be pulled by a well-trained crew in 40 minutes. With the M60, it took over four hours. Also, you can easily repair many parts by simply lifting a panel, wherein before you had to pull the whole engine."

A good attitude

The men of 3/64th Armor are extremely motivated. The excitement of being the first to get the new tank is shared by all members of the unit regardless of their job or rank. Lt. Col. Michael S. Davison, Commander of 3/64th Armor, talked about the attitude of his men. "They have attacked the course! The men have given 100 percent and have done extremely well.

The mechanics in particular have had a tough job since the tanks are used during the day and maintenance must be done at night and outside. In spite of this, their motivation has been great! (Lt. Col. Davison has a lot more to say about his men and the M1 training. See the box on this page.)

The transitional training that the soldiers have been going through has been tough and will not end with their return to Schweinfurt. The training will be continuous. According to SFC Mark English, in S3 of 3/64th Armor, "This training at Vilseck is designed to give the soldiers a baseline feeling for the M1. For them to be proficient the training must be continuous. The five phases they have gone through here must be practiced over and over again. This is a complex tank and it is going to take continuous training to keep us up on it."

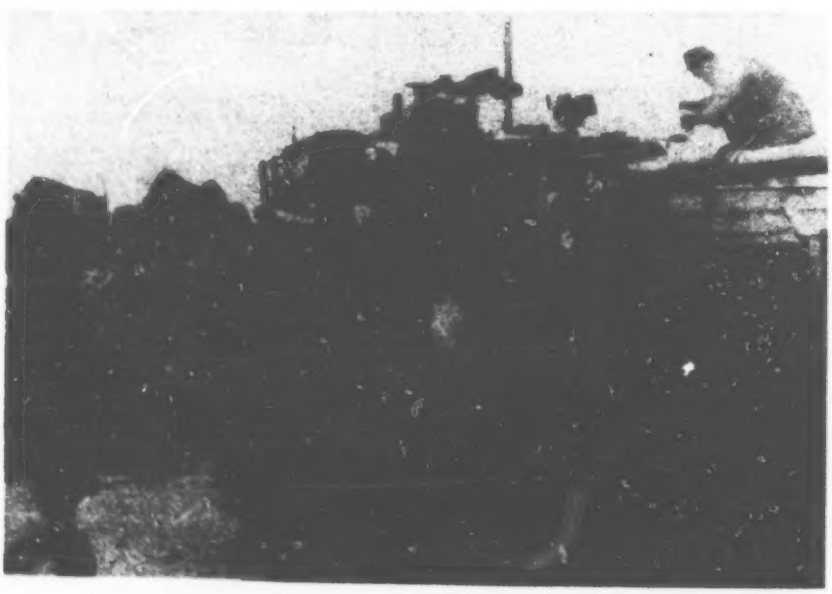


Photo by Pinston

This M1 tank gets a bath after arriving at Conn Barracks. Working the hose is PFC Gary Chuck and on top is Sgt. John McDaniels of A Co., 3/64th Armor.

A talk with the boss

3rd Battalion, 64th Armor is commanded by Lt. Col. Michael S. Davison. Lt. Col. Davison has commanded the Rampage battalion since December of 1979. The Crusader interviewed him recently and asked him about the M1 training and how his men were doing.

Crusader: **How is the M1 transition training organized?**

Davison: The training is organized into five phases. The first is position training, wherein each member of the crew learns the role of gunner, driver, etc. The whole crew is cross-trained. In the second phase, the crew learns how to operate the gunnery system. Crew drills turn the four individuals on the tank into a team in the third phase. The fourth is gunnery at Graf and the fifth is a company-level FTX at Hohenfels.

Crusader: **How rigorous is the training?**

Davison: Everyone is kept very busy. Training is conducted seven days a week and usually begins at 5:00 a.m. and ends at 8:00 p.m. on days when there is no night training.

Crusader: **What is the attitude of the men? Are they motivated?**

Davison: They are attacking the course! They like learning how to use these tanks and are anxious to get their own. The men have given 100 percent and have done extremely well. Very few have had to re-test. The mechanics in particular have had a tough job because since the tanks are used during the day, maintenance must be done at night and outside. In spite of this, their motivation and attitude have been great!

Crusader: **What does this new tank mean to the Battalion and the defense of Europe?**

Davison: The Abrams tank gives us an extremely enhanced capability to move agressively on the battlefield; to fight day or night in different weather conditions; to hit the enemy with an advanced weapons system; and if they hit us — a increased chance to survive. The tank also gives us a greater capability and flexability at the battalion level.

Crusader: **Have there been any surprises?**

Davison: I have been surprised at how agressive and confident our mechanics have been in diagnosing a fault and fixing it in short order. Also, the soldier has picked up on the training and absorbed what the instructors have taught. His attitude has been "This is my tank and I'm going to make it work."

Crusader: **Do you have any personal comments you would like to make with regard to the training?**

Davison: I feel the Company Commanders should be commended for the way they have prepared for this training. It is a reflection on their leadership. It is a long and hard training cycle and they have done well. I'm also proud of the NCOs. They have been doing a lot of coaching and concurrent training during lulls. Also, the Cadre must be recognized for the fine work they are doing. They are putting in the same hours we are.

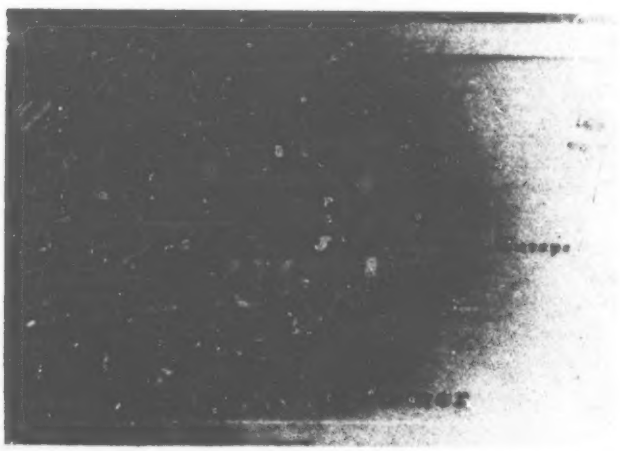


Photo by Hawkinson

The pride of Alpha Co., 3/64th Armor in being 'First' is evident on their company sign.

Crusader

Vol. 6, No. 9 | Serving the "Marne Magic" Community | Wednesday, March 3, 1982

IT'S HERE!

Inside this Issue:

M1 arrives ..... P. 4 & 5
Fasching Highlights ..... P. 3
Dental Care ..... P. 6

Mrs. BYRON. Let me ask General Ball to also respond to that before he jumps out of his chair.

General BALL. Sergeant Kinney is absolutely right, as always. We have had some power control unit [PCU] problems over there. I would also like to say we have isolated the cause of that problem to faulty capacitors and that is being fixed.

The mean miles between failure, the best data on an apples-to-apples comparison we have is that the M60 tank averages about 400 mean miles between combat mission failure. The M1 tests to date show 350 miles, reflecting I think very much the difference in some 20 years of product improvement and maturation of the system.

In terms of the mean miles between essential maintenance demand, that is the figure General Maloney made reference to as being cited that the tank breaks down every 43 miles, that is also the figure that the GAO cited last year as being a breakdown rate, when actually it is the total number of deficiencies over the period of miles as a rate of corrective actions per mile.

To date raw data not evaluated is 48 mean miles between essential maintenance demand for the M1 tank. The assessment is projected—we will do our final scoring conference at the end of this month—that it will come out at 58. It has been improving significantly as we went on through the test.

The comparable figure for the M60 is 60 mean miles between essential maintenance demand. There is no particular difference between the two, notwithstanding the maturation of the systems.

In maintenance ratio, another measure of maintenance burden, we have not scored the final test data, but it currently stands at 1.3 maintenance man-hours per operating hour. Our target is 1.25. We are relatively confident in the final scoring we will have achieved that target. The comparable figure for the M60 tank is 1.49. The M60 is slightly higher, worse in that particular measure.

Our objective of course has been from the start of the program to require less maintenance than in the M60, and we are confident that we will achieve that. We believe we have achieved it now.

Mrs. BYRON. Let me ask the other sergeant one question. In your working with this tank when it comes time to do maintenance on the engine, do you find the new engine easier to maintain than the other one is? Is it easier to pull? Can the crews pull an engine faster and do maintenance on the engine as opposed to the M60.

Sergeant CORKRAN. Ma'am, I am a tank platoon sergeant. The crews do not pull engines on M1 tanks.

Mrs. BYRON. Well, all right, but somebody's crew pulls them.

Sergeant CORKRAN. Right, ma'am.

Mrs. BYRON. And it is your responsibility to make sure that those engines get back in the tanks so when it comes time for you to move them out they are ready to go. So I guess you know how fast they can get them in and out.

Sergeant CORKRAN. Yes, ma'am; a good maintenance crew with the assistance of the tank crew can pull an engine in approximately 25 to 30 minutes. That is probably the most time it would take.

Mrs. BYRON. How long?

Sergeant CORKRAN. Twenty-five to 30 minutes.

Mrs. BYRON. Gee, I talked to some crews last year and they were delighted because they had a little go-round with me on how fast they could pull an engine, and this was the older tank, but they were pulling engines, and I didn't time them, but they were talking and one of them 22 minutes, one of them 21 minutes and another one said we can get it down to 18 if we have to.

Sergeant CORKRAN. That is probably true, ma'am. In the situation I am in now, I am into the 1st Battalion that has fielded the tank in Europe and these kids have gone through an extensive training program and they are right now probably at their lowest level. As we train throughout this year they may be able to pull that engine in 16 minutes, I don't know, with the assistance of the crew.

What is unique about it is that the engine does not have to be pulled to replace as many of the components as an M60 does. So the down time on the vehicle is much less.

Mrs. BYRON. And any time the down time is less the up time is increased and you get more running time.

Sergeant CORKRAN. Yes, ma'am.

Mrs. BYRON. Thank you.

Sergeant CORKRAN. Yes, ma'am.

Mr. STRATTON. Mr. McCurdy.

Mr. MCCURDY. I just wanted to ask one of the sergeants. Our job on this committee, and we rely on you to tell us how well it performs, and that is one of the biggest questions we have, but we also have the question of is it worth $2 million apiece. Do you believe it is worth $2 million apiece?

Sergeant KINNEY. I don't care if it cost $10 million apiece. If I have to go to war, that is the machine I want to go to war in. Cost doesn't mean anything to me as a user. That is the only way I can answer that.

Mr. MCCURDY. But we are dealing with limited resources and if it is a question of whether or not you get a pay increase or added retirement or a cost-of-living adjustment on your retirement as opposed to more tanks, are you saying that you will take the tanks any day?

Sergeant KINNEY. Well, what I am saying is I will take the tank because maybe with that tank I will get to see the retirement. With an M60 I probably won't. [Laughter.]

Mr. MCCURDY. Do you see anything on the tank which you consider to be, let's say aren't gold plated, or anything that really is not essentially or there is something in there that appears that could be replaced with something cheaper or anything like that? Anything in your experience. Is there something on there, you know, it might be a plastic piece inside as opposed to stainless steel, I don't know. Is there anything from your experience that you think there could be a suggestion as to a new part or is there something that is not necessary?

Sergeant KINNEY. Yes, sir; I saw where we can make an improvement on the vehicle where the mounting of the secure setup is for the radios. Where it is mounted right now is a bad location. There is a possibility of the tank commander during a cross-country movement stepping on these cables and breaking them off the front of the secure sets themselves. I gave General Ball and Colonel McVey

a copy of the memorandum that I wrote where I thought it could be moved back approximately 3 inches and it is being worked on to move that back and hopefully that will help cut down possible damage.

Mr. McCURDY. Is this a regular procedure? I mean do you have access you believe to the people who are making these decisions on the equipment itself? I mean, do you feel there is access? If you have a good suggestion do you feel you can make it and they will listen to you?

Sergeant KINNEY. Yes, sir; the suggestion program in the Army is getting better all the time and people are making suggestions in trying to make the tank better, and not only through the PM's office, which is the project manager's office, but also the users. They want the tank to be the best tank in the world, too, because they have to fight with it. So I think they are working on it.

Mr. McCURDY. I am going to give you an opportunity for one jab. We in politics have to deal with them so we don't take our jabs as much as you might, but you have got an opportunity here. If you were to tell the press in this country, and you have seen some of the articles and some of the complaints, do you believe they have been objective in their reporting? If you have a suggestion or if you want to make a comment, I think now is the time to make it.

Sergeant Kinney: As a user I don't think they have been objective in their reporting. If they would really like to see what the tank can do and what the people can do with the vehicle over an M60 they should let us put on a demonstration for them. I will show them. The Ml literally will run circles and shoot circles around an M60 tank. There is no doubt in my mind.

I spent 11 years on M60's and I have 2 years on Sheridans, 1 year on the M48 and 2 years with the M1, and it will outdo all of those vehicles combined.

Mr. McCURDY. Very good. I appreciate your candor.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Mr. Chairman, I just want to say the same thing that Mr. McCurdy just said. You two gentlemen have been excellent witnesses. What we are trying to do on this committee is provide you with the best protection that we can to show you how much we appreciate what you are doing out there for us.

Sergeant Kinney. Thank you.

Mr. STRATTON. General Maloney, with regard to these breakdowns you indicated that the charges were made that the tank would break down every 48 miles or something of that kind, and every time a circuit breaker went off that was something that was included in the GAO analysis.

Actually the GAO indicated that the power train's durability did not meet the Army's requirements. Where do we stand with respect to that particular point?

General MALONEY. Sir, there are several areas. So far in the hearing we have been very positive in what we have said about the tank. There are several areas that need further improvement.

Mr. STRATTON. What is the requirement?

General MALONEY. Our power train durability, the requirement is that the power train which comprises the engine, the transmis-

sion, and the final drive, not have to undergo a repair after removal with a probability of greater than .5 in 4,000 miles of operation.

Now we have achieved in past tests a .37 probability.

Mr. STRATTON. Well now, wait a minute. Don't get too fast here. I have here a document provided to us by the Secretary of the Army in which he has responded to a number of questions which we gave to him some time ago.

One of those questions was to respond to the allegations of the GAO with respect to the M1. This particular recommendation was that the Secretary of Defense should evaluate the results of the turbine engine's testing and production model takes scheduled for 1982 to determine whether the engine has improved sufficiently to raise the power train's durability to a level that meets or exceeds the Army's requirement.

I don't understand what you mean by .5. How can you have a .5 failure?

General MALONEY. Well, it is a 50 percent chance. When you look at the whole fleet, sir, and let's say you have a 1,000 tanks, you would expect 500 of those tanks to go more than 4,000 miles without that kind of breakdown and the other 500 of those tanks would go less. So you would have an average of .50.

Mr. STRATTON. All right. Now the Secretary's response is that the Army plans to reassess the power train durability of the M1 tank during testing scheduled to begin in March 1982 and be completed in March 1983.

Unless the Secretary doesn't know what he is talking about, these tests have begun but they have not been completed. You were just beginning to tell me how successful your tests were.

General MALONEY. No, sir. I intended to let you know that we have not as yet proven that we have achieved that goal nor do we expect to achieve a goal that has to do with track durability which we would also like to tell you about because we want to tell you what is wrong with the tank as well as what is right.

Mr. STRATTON. Well, these are the things that have been mentioned in the press that you have been complaining about.

As with the results of all principal test results of major systems, the result of this testing and evaluation will be provided to the OSD. In the meantime, engineering analyses indicate and experts in the field believe that currently identified power train improvements, which are being incorporated in the production tanks, will permit achievement of the currently stated durability goal of 5 percent probability, .5 probability, of operating 4,000 miles without a failure.

Now this is a fairly important requirement. What is being said here is that we won't even know whether the improvements being put in are going to work until a year from today. To suggest that these challenges are simply nitpicking on whether a circuit breaker opens up every 2 or 3 miles or not is much different from saying that this committee has got to authorize under your recommendation, what is it, 600 of these?

General MALONEY. 776.

Mr. STRATTON. 776 of these tanks to be built, and we aren't even going to know until a year from now whether your tests have demonstrated that it meets the Army's requirements. We are being

asked to spend $1.4 billion for this. And you say that there is also another problem which is the track, and a tank without a track I am sure even the Sergeant over here will admit is not going to get him any closer to his retirement.

So we are not kidding when we talk about failures of the power train and failures of the track.

The answer to this question must be in here somewhere. I haven't had time to look at all of this, but presumably the answer is the same, is it not, that you are going to try to find a correction for the track. When will that be demonstrated?

General MALONEY. Sir, we are going to look for a correction, but we don't expect to find it unless there is some kind of a technical breakthrough that is not expected. The track, we believe we set our requirements too high back in 1972. We asked for a track for this very high-performance machine that would last 2,000 miles. We are finding through experience that it lasts about 1,050 miles. We do not expect, unless things really change radically in the rubber compounding industry, that we will be able to find a track that will last for 2,000 miles.

Mrs. BYRON. What does the M60 track last? How long?

General MALONEY. Colonel Donovan is the project manager for the M60 tank.

Colonel DONOVAN. In development testing, which was done primarily at Aberdeen Proving Ground. In Fort Knox, Ky., we showed 3,500 miles between failure on the tank track itself. There is a very fundamental difference between the M60 track and the M1 track in that we have replaceable pads on the M60 track. When we are talking 3,500 miles, that is between the failures of the overall track rather than the pads. We have replaced the pads usually at 1,700 miles on those tests.

We have not gotten that good experience in the field, and that is primarily because tank track durability is very much a function of the kind of soil over which it is being driven. We experience someplace between 2,200 and 2,600 miles for a strand of track now worldwide with still a pad replacement usually about halfway in between.

General MALONEY. Sir, to return to the power train durability. This item is certainly of concern to the Army. We are at .37 probability of achieving our goal rather than .50 which is the goal. We know what the problems have been in the power train. The transmission has been very thoroughly tested and we think it is clean at this point. Engine and final drives, still some further testing needs to be done and testing of the whole packet together needs to be done.

The engineering changes have been incorporated into the power train complete and the corrected power trains are beginning to come off the assembly line this month, March. So we will begin testing those tanks shortly. We will continue that testing. We can only run them so fast and we have to accumulate a certain number of miles on the tanks. So we will continue that testing the rest of this year.

We will be very pleased to report to your committee interim reports to let you know where that testing stands. But we feel very high confidence that the power train will prove to be as durable as

our goal requires or more so. Because we wanted to have an outside look, we brought into the Army a panel of outside experts to look at this problem and give us their judgment. Their judgment, which was rendered to the Secretary of Defense, was that with the fixes now in place our powertrain durability would exceed what we expect.

Mr. STRATTON. You are too young to remember this, but the Sergeant here said that he had duty on the Sheridan. This was exactly the history of the Sheridan. It didn't live up to the specifications. The testing people indicated that it was inadequate, but the Army always came back to us and said, yes, but we have really got the thing fixed now. It is really going to be fixed. But it didn't get fixed. Exactly the same thing that has happened with this tank has happened with the Sheridan. It was sent out to Vietnam because the congressional hearings were getting to be a little embarrassing and it didn't get fixed out there.

When you say the blue ribbon panel says that we think everything is okay, the proof of the pudding is in the eating. And we are going to have to wait until March 1983 to find out whether this thing has been done. I mean, we can't accept the fact that you say or the blue ribbon panel says that it is going to happen, because we have seen in the past that it didn't happen and we have already got the tanks over there.

You say the track is supposed to go 2,000 miles. It only goes 1,000 miles. What does that do in terms of the availability of the tanks and what does it do in terms of cost? Obviously, if you have to pull a track, I don't know if Mrs. Byron timed the track pulling, but I would imagine that would be considerably more than pulling an engine. That means that these things are going to be immobilized for a fairly considerable time. In fact, that mobilization is going to happen twice as often as it should under your stated requirements.

Colonel MCVEY. Sir, what happens on the track, is not catastrophic and you can see it coming. So you have to plan on it and program it so you change the track. It costs you more money, you are right, probably twice as much.

Mr. STRATTON. Well, I am not only thinking of money, I am thinking about time on the battlefield. If the T-80 is headed for you and you look at your schedule and you see that it is time to remove the track, you might as well throw up the white flag.

Colonel MCVEY. Sir, if I had to wait until the battle to decide that I had to change track, I shouldn't be in that kind of a job.

Mr. STRATTON. You might be in a 2,000 battle out there in the Middle East. You can't tell.

Colonel MCVEY. They won't last that long, sir.

Mr. STRATTON. I wouldn't bet on that. You know this administration has repudiated this idea of a short war. It is going to be a little bit longer and you might even find that you would have to go 2,000 miles.

It is not just a question of nitpicking, it is a question that the availability of the tanks you have got over there is really going to be cut in half. You have already testified to Mrs. Holt that for every mile or hour that you drive you have to spend 1.37 hours in maintenance, if I understood what you were saying?

Isn't that correct, Sergeant? Is that the figure you gave us?

Colonel DONOVAN. Yes, sir. I didn't give you a figure on how many hours you had to spend per mile driven, but it takes about 3 hours to change one track.

Mr. STRATTON. I thought we had a figure here that you either gave to Mrs. Byron——

Mrs. BYRON. In response to my question, I was asking you on maintenance hours per mile.

General BALL. That was my response to that, and that is correct. That is maintenance man-hours per tank operating hour. That is lower than the current tanks.

Mr. STRATTON. Well, anybody who drives an automobile, if he had to spend 1.37 hours maintaining the car after he had driven it for 1 hour, I think he would take the Metro. This seems to be an excessive amount of maintenance. Once again, it means that virtually the operation of the tank is going to be held up. For every hour you drive you are going to keep it in the barn for another hour.

General BALL. Sir, for perspective, the current tank takes 1.37 hours per operating hour.

Mrs. HOLT. Mr. Chairman.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Really I guess the bottom line is do we go on with production or do we stop? What would it cost us if we stopped everything until we fixed all these problems? What would be the cost of stopping production?

General BALL. I would be happy to respond to that. I would like, if I may, to show where we are in the power train durability and what we are doing there.

POWERTRAIN DURABILITY

REQUIREMENT: .5 PROBABILITY OF 4000 MILES W/O REPLACEMENT

TEST: 7 EARLY PRODUCTION VEHICLES - 35,242 MI (SCORED)

RESULTS	POINT ESTIMATE	80% CONFIDENCE BAND
REQUIRED	.5/4000	3307<MMBDF<8875
DEMONSTRATED: (PMO ESTIMATE)	.38/4000	2590<MMBDF<6049
* FORECAST:	.62/4000	4271<MMBDF<13,685

* BLUE RIBBON PANEL FORECAST FOR TANKS PRODUCED AFTER MARCH 82

I would like to explain that in our test we measured this on 7 of the first 17 production vehicles off the line. We drove them 32,000

miles. We went through an assessment. Not all failures are scored against the hardware.

To meet the requirement, the power train must go an average of 5,771 miles between the durability failure. There are failures that don't score as durability failures, for example, a crew error, or a secondary failure, or an accident.

We gathered all this experience. We found that we did not meet the requirement that had been set in 1972. Instead of making 0.5 probability of 4,000 miles, we came out at 0.37. This chart demonstrates what that means in terms of, I think, a more meaningful figure, a confidence band, 80-percent confidence that it will go 2,590 miles but less than 6,000 miles between failures. The average miles we put on a tank in Europe is about 1,000 miles per year.

So, this is saying we have pretty good confidence that we can go a couple of years on the average between having a durability failure in the power train. Eighty-one percent of those failures are engine related. The rest of them are primarily transmission. We are confident that we have the transmission failures fixed, the failure modes of pattern failures.

With the engine, the fixes were slower in coming than I expected and that I think they should have been. That is why the testing didn't start in March. We had two engines modified with design changes in them. We took these engines and put them in vehicles at Aberdeen and ran those vehicles, one 3,000 miles and the other 6,000 miles, and the engines successfully completed that test. I also want to run a laboratory test of a full-up modified engine before we go into follow-on testing.

The blue ribbon panel that was mentioned assessed the fixes. Their conclusion was that the engines containing those fixes, plus the quality improvements that they already saw we had put into the process, would get 0.6 probability of 4,000 miles between failures or the 80-percent confidence level that is shown here.

In terms of cost, if our total first 2 years production performs at this level, and I have no reason to expect it to do otherwise, the cost delta, the cost penalty for this performance, as opposed to having met the requirement, is estimated at about $16 million, total program impact.

The track cost, we set the track life requirement at 2,000 miles. We are making 1,056 miles in all manner of operations, the average across all of them. Track costs almost $16,000 a set, so the penalty is about $8,000 per tank per year. We would get 2 years of operation if we had a 2,000 mile track and we get about 1 year of operation. So, we have to change the track out about once a year on the tank and the penalty is about $8,000 per tank.

It has been mentioned that we don't have any prospect in the near future for quantum improvements in the track performance. The M60 track has been mentioned. It has a longer life but it weighs 3,500 pounds more. So, we pay a penalty for that if we try to put a track of that weight on the tank and it impacts other components.

The change of the pads. Most crews I know would rather change out a track than replace the pads. So, it is not all plus to have a replaceable pad track.

We are trying, in development programs, to develop a follow-on track to minimize the weight penalty we pay to get improved durability. But, at this time I have no reason for confidence that we can produce a 2,000 mile track in all operational environments for the M1.

I do have confidence that we can have a power train that will exceed the established requirement of 0.5 probability. For all failure modes we are replacing powerpacks and replacing engines in particular far less frequently in this vehicle than we do in our other tank fleet vehicles. It is significant, in my judgment, that this, notwithstanding our current measured durability level, we still have a much lower engine failure rate than with the M60.

Mr. STRATTON. Mrs. Holt's question is shouldn't we slow up the purchase because you are not going to know whether the power train has met the specifications, as I indicated earlier, until March of next year, 1 year from now.

Why should we buy all 760 of them this year and run the risk that they will not measure up? Wouldn't it be prudent to cut down the production until we see whether the tests are successful.

General BALL. I am sorry, I failed to respond to that question.

I have analyzed what we could do. It would be extremely disruptive and very expensive to hold at 60 per month, and I haven't even analyzed the cost. We already have the long lead items on order. We have a great deal of sunk cost in that. I have assessed what the impact would be if we held to 60 a month and produced not 776 but 720 tanks across the period. That would mean that we could not then go to the 1,080 tanks in the following year. We would have to have 1 year to ramp up into that. We would push about 334 tanks into the end years of the program and we estimate the cost at $430 million, inflation included.

General MALONEY. Sir, I think to kind of summarize it, we see the risk of not achieving the power train durability requirement as being low, and we see the risk to the Nation, if we do not go ahead and produce this fine tank to help offset the Soviet's vast superiority, as being great.

So, balancing the two, we strong recommend that this request be supported.

WRITTEN STATEMENT BY MAJ. GEN. JAMES P. MALONEY

Mr. Chairman: I am pleased to be here to discuss the M1 Abrams tank, the M2 and M3 Bradley fighting vehicles and the Multiple Launch Rocket System or MLRS. These systems all contribute to the modern capable Army we are building. The Abrams and Bradley are key parts of the Army's modernization program—they constitute the high end of a hi/low mix of combat maneuver equipment. The MLRS fills a void in conventional fire support for the Army. Congress has long encouraged the Army to develop a combination of systems which will build upon one another to improve the overall effect of the whole Army. These systems are a part of such an effort.

The tank in combination with the infantry fighting vehicle, the AAH, new intelligence systems and a new tactical doctrine emphasizing maneuver and firepower, will give us an Army capable of defeating a sophisticated enemy force and certainly one more capable of deterring war.

First I want to tell you specifically about the progress we have made in the M1 tank program.

Our M1 budget request for fiscal year 1983 and current program status is as shown.

The budget request of $2.025B fully funds the 776 M1's we are requesting in fiscal year 1983 along with their initial spare parts. It also funds advance procurement needs for fiscal year 1984. The RDTE request funds the continued development of the M1E1.

The program for meeting the M1 acquisition objective is shown on this chart and reflects production assumptions based on our current budget request, and the tanks we will seek funding for in subsequent years.

This program also supports the current production plan which is to produce 60 tanks a month beginning in November of this year and 90 tanks a month beginning in February 1985 to program completion.

The Army's most dangerous potential adversaries, the Soviets have continued to field new tanks. It is imperative the U.S. Army have a tank which can survive and win on a high-intensity battlefield, and against a broad spectrum of antitank weapons. Our tank must be good, and we must have sufficient numbers of them. Here is the general plan for the tank fleet.

This chart shows how the tank fleet changes as the M1 comes into the inventory. The objective is to improve the current fleet of tanks at the same time the M1 comes on line. The M1 will be the main punch against the newer Soviet tanks but the Army will also continue to depend on the improved M60A3 for many missions. As you can see, we plan to use this dependable battle tank for many years to come even though there is no new M60 tank production for the Army in the fiscal year 1983 budget. The last year of approved funding for the production of new M60 Army tanks was fiscal year 1981. Deliveries of these tanks will be completed in June 1983. All tank production after that time will be the result of the Foreign Military Sales [FMS] program. Based on current orders, deliveries for the FMS program will continue through November 1983.

The current plan for the M60 series modification program calls for the conversion of all M60A1 tanks to the M60A3 with its improved fire control and thermal night sight. The fiscal year 1983 budget of $162.9 million will provide for the procurement of 453 conversion kit sets.

Now I would like to bring you up to date on M1 testing. During the past year the Army completed operational test III and we have nearly completed development test III. As we stated last year, we have solved the dust ingestion problem and the track throwing problem. There has not been an engine failure due to dust ingestion since 1979 and the M1 has consistently demonstrated excellent mobility and agility. These latest tests evaluated not only the automotive, fire power, maintainability and durability of the Abrams, they also evaluated the adequacy of the M1 training program for crewmen and mechanics and tested the logistics support for the M1 in a tank battalion.

In summary, these tests have shown that while we have not yet solved every M1 problem, considerable progress has been made. We are still short of the power train durability goal and track durability has not met desired levels. But tests have also shown that the M1 is a very, very good tank that meets or exceeds the key combat requirements to survive and win on the battlefield. The test data and the immediate need for the M1 both fully support rapid production and fielding of the Abrams. General Ball will speak more specifically to past, planned, and ongoing testing.

As of March 9, Chrysler had delivered 324 M1's to the Army. The first M1 battalion has been fielded at Fort Hood and we have M1's in the training base at Fort Knox. We have also fielded the first battalion in Europe and are on schedule for the second. Col. Pete McVey, our European fielding chief, will give you a comprehensive update on European fielding following Major General Ball's presentation.

A final comment on fielding and troop acceptance: Soldiers in every M1 unit are extremely enthusiastic about this tank and its capabilities.

Although the M1 provides significantly improved combat capability and unequalled survivability for the crew, our Soviet counterparts have not been idle. Recent evidence of Soviet tank prototypes convincingly states, we must not sit back now that the M1 tank is in production.

The M1 was designed from the beginning to have significant growth potential for which evolutionary developments are planned. The improvements in survivability, fightability, and maintainability will enhance logistical interoperability and sustain the M1's combat advantage over projected Soviet armor advances.

For example, the Army is adapting the German designed 120mm tank gun and ammunition for introduction into production as the main armament of the M1. We have delayed introduction of this 120mm gun until the fourth quarter fiscal year 1985 to ensure design maturity and fully test the ammunition being concurrently developed. This up-gun effort constitutes one of the major capitalizations on the

planned growth potential of the M1 and will provide increased lethality needed to keep pace with anticipated advances in Soviet armor.

Along with the 120mm gun, the Army will simultaneously introduce the first package of preplanned product improvements. The addition of a hybrid NBC collective protection system will improve crew survivability while fighting in a chemical environment. A crew cooling system will help maintain the soldiers' combat effectiveness by reducing the likelihood of heat induced casualties while wearing the NBC protective overgarments. Survivability will be further achieved by long planned armor upgrades which will provide further protection against Soviet antitank munitions.

These changes are scheduled for production and the first product improved M1E1 tank will be produced in the fourth quarter of fiscal year 1985. The improved gun and ammunition, and the enhanced survivability of the M1E1 will counter postulated advances in Soviet tank development and help us maintain the technological advantage the M1 has provided so far.

Now let me turn to the M1 cost. I fully appreciate the concerns of the Congress with the growth in costs of the M1. They are a fact and we aren't satisfied with the increases. However, the increases should be put in perspective.

In my discussion of cost I have pulled out the unit hardware cost of the tank itself and address that instead of the total program unit cost. The program cost includes many variable elements, whereas the unit hardware cost is the total cost of only the tank hardware, full up with all its equipment included, as it rolls out the factory door and is accepted by the Government. It is also our congressionally mandated mangement baseline. The Army originally projected, back in 1972, that we could produce a tank which would be bought for $507,000 in 1972 dollars. the current estimate is that the tank's average unit hardware cost is $604,000 in 1972 dollars, which is 19 percent higher than the original estimate. More than half of that is caused by the increased production rate and the significant added value we will receive from the 120mm gun and block modification product improvements we plan to incorporate into the program. Consequently, the constant dollar cost growth on this program is less than 5 percent. This chart (chart 5) summarizes the unit hardware cost history of the M1. The green band reflects the benefit of planned, congressionally sanctioned product improvements and the yellow band portrays the rather minimal cost growth. Now, the current unit hardware cost estimate is obviously more than $604 thousand. The Army now estimates the average unit hardware cost of all 7,058 tanks to be $1.8 million in fiscal year 1983 dollars. This difference between $1.8 million and $604 thousand is inflation and is represented by the red band on the chart.

We in the Army are concerned about cost control and are doing our best to control, and in fact reduce, the cost of the M1. Other than approved product improvements, and inflation, there has been minimal cost change from the original M1 estimates. I would hope that these facts substantiate, as I believe they do that the media attacks of massive cost overruns on the M1 are not warranted. The country is receiving good value for its investment in this modern battle taken.

Mr. Chairman, in these past few minutes I have summarized the Army's M1 tank program.

We in the Army recognize the Abrams is not a flawless tank, and we have had a number of problems to overcome to get it into the field. On the other hand, we soldiers believe it is the best tank in the world, one in which the men who operate it have great confidence and one that will keep them alive on the battlefield as they go about their business of being prepared to defeat our potential enemies. The M1 Abrams is a tank with potential to increase its capabilities. The tank is not only the best in the world, but with changes in armament, armor, and other product improvements the M1 will continue to be a match for enemy tanks in the future. The Army needs your support for continuing production and fielding of the M1 rapidly and for continuing our program of modernizing the M60 fleet.

I will be followed by Major General Ball who will give you a status report since last year's budget hearings, and explain how this year's funding request will be used prior to discussing the Bradley fighting vehicle and the MLRS.

[The portion of Major General Maloney's statement covering the Bradley fighting vehicle and the MLRS is in the continuation of this hearing on March 22, 1982.]

WRITTEN STATEMENT OF MAJ. GEN. DURAD D. BALL, PROGRAM MANAGER, ABRAMS TANK SYSTEM

Mr. Chairman, members of the committee: Just a year ago, I made my first report to you as program manager of the M1 Abrams tank system. I'm pleased to be here again and to be able to report that the program status is essentially as projected at that time. There have been many successes and, of course, a few disappointments. I plan to touch upon each as I recapitulate the activities of the past year and outline our plans for the future. With your permission I will insert my formal statement into the record, present a brief program overview, and respond to any questions you may have.

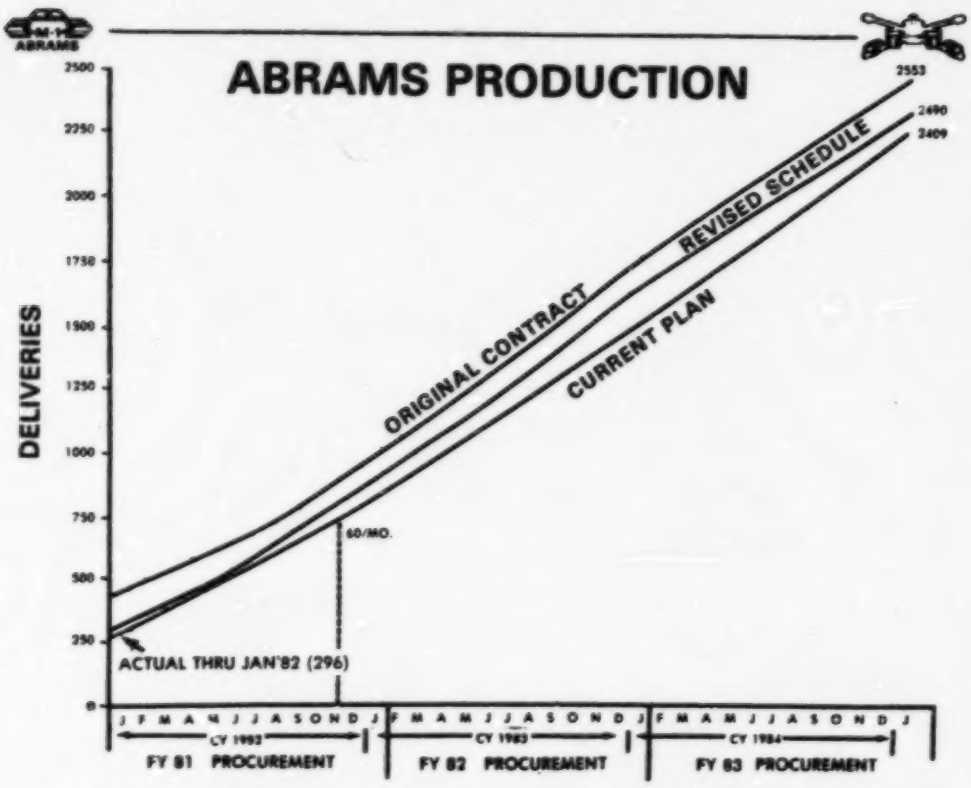
PROGRAM OBJECTIVES

Our fundamental objective since the beginning of this program has been to provide the main battle tanks the Army must have to meet the threat of the 1980's and beyond. More specificially, we have been challenged to develop, produce, and field on an accelerated schedule an affordable tank offering significant performance advantages over the current tanks. Our response to that challenge is the M1 Abrams tank, now in production and being fielded in our tank batallions in the United States and Germany.

PRODUCTION AND FACILITIZATION

As you are aware, production delays during the first year forced us to delay fielding by 6 months. In retrospect, I believe our plan was too optimistic and that it failed to give due consideration to the magnitude of the effort and the inevitability of problems in initial production. This is not to imply that we could not have done better, however. Management has not always anticipated what needed to be done and acted on a timely basis to get it done. While progress continues to be somewhat slower than we had expected, the current status and outlook is favorable. You will see in this report that our production build up is progressing essentially as we projected last year and that vehicle production costs in our fiscal year 1981 buy are about 18 percent lower than projected at that time. The procurement objective of 7,058 tanks and the plan to establish a surge capacity for 150 tanks per month remain unchanged.

ABRAMS PRODUCTION—VGT—PRODUCTION PLAN



We have accepted some risks in the interest of forcing production maturation and getting this urgently needed system into the field. Although we are about 3 weeks behind the schedule presented last year, I believe the schedule projected here is attainable with acceptable risks. I must emphasize that we have insisted upon and achieved greatly improved quality as we increased rate. There will be no relaxation in this regard.

Note that the total tanks to be produced in fiscal year 1982 and fiscal year 1983 is 81 less than planned earlier. This reflects the net effects of budget actions including a $503.2M net reduction in the vehicle budget line over this period. I will discuss this in more detail later.

Over most of the past year, engine production has paced tank production. Engine deliveries have improved, however, and fabrication and assembly at the Lima Army tank plant have been the limiting factors since October 1981. The production of other components has progressed well and seems to be adequate to support the production plan. I anticipate a continuing need for intensive management of engine production and tank fabrication and assembly. We also are considering second sourcing the engine to broaden our production base.

The sale of Chrysler defense has created some uncertainty within the workforce. We have noted a decrease in productivity over the past 60 to 90 days. I am optimistic that this disturbance will be short lived and that we will see a return to positive trends quickly. In this regard, I am encouraged by the approach general dynamics management has taken. They have made a strong corporate commitment to success of this program and brought in a task force including high level personnel in all functional disciplines which has performed an onsite assessment. The payoff remains to be seen, of course; but to this point, I am pleased with the approach.

The first two tanks assembled at the Detroit arsenal tank plant will be delivered on schedule this month. Preparations are progressing as planned for production growth to 30 tanks per month in January 1983.

Present production capacity is 60 units per month with a great deal of multishifting required. Efforts are being directed toward increasing that capacity to 150 per

month on a multishifting basis, with a interim goal of 90 per month. Funding is adequate to meet both goals.

TESTING

Much has been demanded of this tank. This is as it should be. It is appropriate also that we do all reasonable to assure ourselves that the tank as designed and manufactured does what it is supposed to do. To verify that it does, we have subjected the Abrams tank to the most extensive, rugged tests yet required of a tank. We have driven early production tanks 82,300 miles and fired 18,400 main gun rounds under all conditions of weather, terrain, and operational modes. We have validated the technical performance and, most importantly, we have verified that with only normal training, our soldiers can operate and maintain it effectively.

TEST RESULTS FAVORABLE

Survivability—Actual firings demonstrated armor met or exceeded requirements.
Firepower—Excellent, especially demonstrated firing-on-the-move capability.
Mobility/agility—Superb, important key to battlefield survivability.
Reliability—Assessed to exceed both combat and system reliability requirements.
Troop acceptance—Troop reception and confidence in M1 has been outstanding. Unit esprit de corps increased following M1 reception.

Results of this testing show that the tank performs superbly in those attributes of greatest concern to those who may have to go into combat with it. Live firings have demonstrated the unparalleled protection afforded an Abrams tank crew.

Firepower and mobility combine to make this an exceptionally lethal combat system. Our troops have shown they can engage distant targets, day or night, while moving cross-country with excellent probability of scoring a first round hit. I know of no other tank which can match this performance. I just received the report that one company undergoing transition training in Germany qualified 12 of their 13 tank crews on the first run—a record for the U.S. Army Europe.

The advantages of the greatly improved mobility are obvious, not only survivability, but to battlefield flexibility. A commander has much greater capabilities to mass and reinforce. This tank can move from point to point in one-half the time required of our other tanks.

I'll discuss reliability when the next slide comes up, so permit me to skip to the last bullet—troop acceptance. Our troops like the M1. Soldiers who have been trained with the M1 express great confidence in their ability to win should they be called upon to go into combat with this tank.

In summary, I believe there is near universal agreement, even among those critical of the tank, that it excels in those operational characteristics shown here.

Although we have fallen short of two reliability, availability, maintainability, and durability [RAM-D] requirements, overall performance has been good. I'll discuss those shortfalls and some of the eleven RAM-D requirements we have met on the next slide.

RAM-D PARAMETERS/STATUS

1 AUG 1981

PARAMETER	REQUIREMENT	STATUS
COMBAT RELIABILITY	320 MMBF	350
SYSTEM RELIABILITY	101 MMBF	126
SCHEDULED MAINTENANCE		
DAILY	.75 CLOCK HRS/3 MHS	.6/2.55
AT 1500 MILES	36 CLOCK HRS/64 MHS	23.6/37.6
UNSCHEDULED MAINTENANCE		
ORGANIZATIONAL 90 PERCENT	< 4 CLOCK HRS/8 MHS	3.3/5.9
DIRECT SUPPORT 90 PERCENT	< 12 CLOCK HRS/22 MHS	11.2/19
MAINTENANCE RATIO	1.25 MAN HR/OPER HR	1.34
VEHICLE LIFE	6000 MILES	6000 +
POWERTRAIN DURABILITY	.5/4000 MILES	.37
PRIMARY WEAPON LIFE	1000 ROUNDS	1000
TRACK LIFE	2000 MILES	1056
ROAD/IDLER WHEEL DURABILITY	< 20 PERCENT IN 3000 MI	OK
SPROCKET LIFE	1500 MILES	1805

These data reflect the status as of July 1981. Although the tests are essentially completed, the final assessment will not be completed until later this month. Our tentative evaluation is that all factors will remain about the same except for the maintainability ratio. Improvements lead us to conclude that this requirement will be met.

Note that in the key measures of combat mission reliability—the mean miles between failures which would make the tank incapable of continuing a combat mission—the tank has done very well. Similarly, system reliability—the mean miles between failures which degrade system performance has proved to be better than the requirement established.

When the final assessment is complete, we expect that track life and power train durability will be the only requirements not met.

Track life is limited by the chunking away of the rubber pads designed to prevent damage to roads and hardstands. While we are pursuing development programs to improve track durability, we believe limitations in state-of-the-art in rubber compounds will limit improvements to 10 to 20 percent in the near term.

POWERTRAIN DURABILITY

REQUIREMENT: .5 PROBABILITY OF 4000 MILES W/O REPLACEMENT

TEST: 7 EARLY PRODUCTION VEHICLES - 35,242 MI (SCORED)

RESULTS	POINT ESTIMATE	80% CONFIDENCE BAND
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* FORECAST:	.62/4000	4271<MMBDF<13,685

* BLUE RIBBON PANEL FORECAST FOR TANKS PRODUCED AFTER MARCH 82

The major contributor to powertrain failures has been the engine. We are confident earlier problems with the transmission have been solved. The engine quality has improved; however, some needed design changes were placed into production only last month. An independent panel has assessed these design and quality improvements and concluded that engines incorporating the changes should meet the requirements. We plan a followon durability test commencing in May 1982 to validate that production powertrains meet the requirement.

The selection of a turbine engine for this tank has been the subject of much controversy. Understandably, the failure to date to meet the durability requirements established for the engine has prolonged the controversy and heightened concern. We believe, however, that the problems experienced are not inherent in the application of a turbine engine to a ground combat vehicle. Rather, they seem clearly to be a result of shorcomings in engineering, production control, and quality assurance on the part of the producer. The results of extensive efforts to bring about the needed improvements, while slower in coming than hoped, nonetheless have been substantial. With continued emphasis by the government and the contractor, we are confident the turbine engine will measure up to its exceptional potential. We intend to insure that emphasis is continued.

SUPPORTABILITY

We have made a major effort over the past year to improve all elements of M1 supportability. No aspect of the program has received a greater priority or more managerial attention. I am pleased by the progress. We have made a quantum advance in the quality and effectiveness of manuals and test sets. The supply system was converted from the developmental system to the standard system on schedule. Our spares and repair parts situation is better than projected last year; most items are now in stock. There are, however, about fifty parts which continue to require intensive management. While we must watch these parts carefully, we believe the situation is manageable.

The extensive validation and verification of all of the operator level publications has been completed and validation and verification of the remaining manuals is on schedule for completion in November 1982.

Field acceptance of the semiautomatic test equipment has improved markedly as we corrected earlier software and manual shortcomings. As you are aware, we had some problems during early testing and have had a dedicated task force working to improve our troubleshooting capability. The engine diagnostic routines were particularly troublesome and received first priority. All engine routines have been checked, modified as necessary, validated, and proven to be effective. The direct support electrical system test set has been a winner. The thermal imaging system test set, a hot mockup, is doing well in its interim role. Quantities are adequate to sup-

port the fielded units until the end of 1982 when the first production deliveries of the thermal system test set will be received.

Colonel McVey will address fielding of the Abrams in Europe. I'll just say that fielding is on schedule. We have one M1 battalion on the ground in CONUS and one in Europe. Tanks and support equipment for subsequent battalions are on track to support required deliveries. To this point, our fielding in Europe has been highly successful.

In summary, the support system is in better shape than projected for this point in our assessment of a year ago. Much remains to be done, of course. We will permit no relaxation of our full court press on supportability. We have confidence in further improvements and maturation in the year ahead and in our ability to support the tanks in the field.

ALTERNATE ENGINE PROGRAM

Development and testing of a 1500 horsepower diesel engine, the AVCR developed by Teledyne Continental, continues. The 1000 hour lab test was terminated after 218 hours on 14 September 1981 due to 51 incidents.

This test is scheduled to start again in March 1982. Tacom has estimated an investment of over $300 million and 40 months would be required to bring the engine to production. I do not believe such a program is nec sary—certainly not at that cost.

M1E1 PROGRAM

The M1 program has included planning for evolutionary improvements to capitalize on technology and the growth potential to assure its continued effectiveness. We believe the gun and other improvements I will discuss are necessary to meet the future threat.

We plan to adopt a 120 mm system in 1985. This consists of a German-developed, 120 mm smoothbore gun (tube and breech), four types of German ammunition, and a new, highly effective kinetic energy round, the XM829 being developed by the U.S.

One critical element in the Army's ability to field an M1E1 tank by August 1984 as originally directed was the availability of U.S.-produced 120 mm ammunition to support the fielding of the M1E1 tank fleet. The technical problems previously listed have led the Army to make a management decision to readjust the 120 mm tank gun program scheduled by delaying the first production delivery date to August 1985. Among other advantages, this schedule offers the potential to go directly to the XM829 round and bypass the less capable XM827.

We are monitoring German testing and operational use closely to be assured that problems found there are resolved satisfactorily. We are especially cautious of the combustible cartridge case. Initial U.S. drop testing of the rounds indicate that the combustible case is not as sturdy as we would desire. Although only preliminary results are available, I have concerns about the ruggedness of the rounds. This is not only a wartime concern. It is significant also in a peacetime environment in Europe, where the ammunition may be handled many times as it remains uploaded in a tank for several years. We have run tests firing deliberately damaged rounds, and while we do not have an residue problems, we must be assured we will not have ammunition breakage that presents a safety hazard or that increases overall costs. We have planned and are conducting extensive tests to assure that this ammunition will stand up under the U.S. Army stockpile to target sequence before we make our final decision.

Other preplanned improvements also will be introduced as a block in 1985. Specifically, we are planning to incorporate a hybrid NBC protection system and to make some modifications to the armor.

The M1E1 tanks will add an overpressure system that also filters the air, giving our tank crewman the capability to fight and survive in an NBC environment without the constraints imposed by the face piece. Our current approach is to adapt components currently on the Cobra helicopter to reduce costs and shorten the normal development cycle.

An additional change is that of an armor modification. The program is a low technical risk with a high payoff. This will start into production in late 1984 incorporating this armor into 105 mm gun tanks and transitioning it into the 120 mm gun version.

We are testing the 120 mm gun and ammunition now along with some upweighted vehicle tests. We will start contractor prototype qualification test of M1E1 vehicles this fall and progress through DT/OT II in 1983 and 1984. M1E1 testing will be completed in April 1984 in time to support an ASARC in June 1984.

FUNDING

As a final topic, I come now to program costs. I am especially pleased to report that our current estimate of total program cost is $1.504 billion less than that presented to the Congress a year ago. Many factors have contributed to this reduction to include negotiation of a third year production contract for 569 tanks at manufacturing unit costs 18 percent below that projected last year. While that projection was acknowledged at the time to be conservative, the results are encouraging nonetheless and reflect well on the many individuals and agencies, both government and contractor, who have helped make it happen. Special "should cost" teams made in-depth reviews at Chrysler defense, Hughes, and Avco Lycoming to isolate cost drivers, promote cost reduction, and assist in the negotiation of a fair contract price. The result is a unit hardware cost of $1.7M compared to $2.1M projected last year. There remains potential for continued if less dramatic savings in future production years. I recognize the imperative of minimizing costs and am committed to doing so.

ABRAMS PROGRAM BUDGET CHANGES

(ESC $ IN MILLIONS)

	MARCH 1981	MARCH 1982	CHANGE	NARRATIVE
RDT&E	$ 1,133.2	$ 1,138.9	$ 5.7	INCL. BIP'S
VEHICLE	18447.0	17555.9	-891.1	-796.1 COST REDUCTIONS -45.8 PROGRAM STRETCH-OUT -140.8 OTHER PROG. CHANGES
TRAINING	272.8	275.0	2.2	
INITIAL SPARES	1225.8	604.4	-621.4	INITIAL SPRS TRANSITION TO REPLENISHMENT SPRS EARLIER: FY85
TOTAL	$21,078.8	$19,574.2	$-1504.6	

* PROCUREMENT PROGRAM TOTAL $18,435.3

23 FEB 82

In total, these hardware costs projected across the total program result in a reduction of $796M. The reduction of the cost of initial spares is a result of transitioning to replenishment spares 3 years earlier than originally planned. Previously, these costs were included improperly in the selected acquisition report. This has now been corrected and these costs have been transferred to the proper category within the Army procurement budget.

Future cost reduction efforts will focus on improving efficiency in both manufacturing and procurement. I believe there is substantial potential for savings in both areas. We are planning to initiate second sourcing of fire control in the fifth year; however, there seems to be a potential for even greater savings through multiyear procurement of some of these components. We will reassess this approach upon receipt of a firm proposal for multiyear procurement promised by April 15, 1982.

In addition to the actions I have just outlined, we are continuing and intensifying productivity improvements at all contractor locations as we ramp up the production rate. The fiscal year 1982 funding year establishes tank production at a rate of 60 per month, to be delivered during calendar year 1983. The fiscal year 1983 budget enables us to increase to nearly 90 units per month, a more efficient rate. We plan to begin deliveries at 90 per month in February 1985 (fiscal year 1984 procurement) and sustain that rate throughout the remainder of the program.

At this point, let me outline in detail the funding requirements for this program in fiscal year 1983 looking first at the R.D.T. & E. appropriation.

M1 ABRAMS RDT&E FY83 BUDGET

(ESC $ IN MILLIONS)

BUDGET LINE	FY83 BUDGET
M1	$12.0M
M1E1 (GUN INTEGRATION)	31.5
BIP	42.4
(SUBTOTAL)	($85.9M)
TMAS 120MM GUN	$1.4M
TMAS 120MM AMMO	21.5
(SUBTOTAL)	($22.9M)
TOTAL	$108.8M

23 FEB 82

The base M1 tank program is nearing completion. The $12M shown here supports completion of the R.D.T. & E. portion of the RAM-D growth program and the technical manual validation/verification activity.

The M1E1 (120 mm) gun integration program is required for continuation of the tank/gun integration to include initiation of DT/OT II testing.

The block improvement program of is planned to continue system integration of block 1 improvements. We also plan to initiate development of block 2 improvements. One of the key items we're looking at here is an improved commander's station, this capability would provide improved surveillance and enhanced command and control capability for the commander. I believe this offers great potential for enhancing the combat effectiveness of the tank.

The TMAS gun and ammunition funding is for continued work on the 120 mm cannon and ammunition development to include initiation of development testing of the high technology KE round (XM829).

M1 ABRAMS FISCAL YEAR 1983 PROCUREMENT BUDGET

[ESC dollars in millions]

Quantity	Budget (776 tanks)
Production base support	45.8
Regular procurement	1,457.0
Advance procurement	432.3
Training equipment	58.2
Initial spares and repair parts	135.7
Total	2,129.0

The fiscal year 1983 procurement request of $2,129.0M supports production of 776 tanks.

The production base support program continues with both recurring costs and new start costs. A total of $22.3M recurring expense is required to rehabilitate or replace equipment and facilities and to repair production facilities as required. The new start monies are required to procure machinery for the block improvement program ($23.5M).

The PAA funding requested in the M1 vehicle line encompasses to budget lines—regular procurement and advanced procurement.

Regular vehicle procurement costs ($1,457.0M) include basic hardware procurement costs to fund the procurement of 776 tanks. Other activities funded by this budget line are recurring system technical support activities, (now funded for the period of execution), the second source fire control program (deferred from fiscal year 1982), special tools and test sets, auxiliary services, 120 mm initial production facilitization and government engineering and quality assurance costs.

Advance procurement costs (432.3M) are required to fund fully the long lead requirements for 1080 units. In prior years, advance procurement had been partially funded with termination liability provisions; hence, the ratio to total vehicle costs is higher this year.

The training equipment request covers the procurement of 26 unit conduct of fire trainers in addition to the procurement of maintenance trainers.

The initial spares and repair parts cost is the combined requirement of both TACOM and ARRCOM. Principal items procured include engines, transmissions, fire control units, and repair parts.

In total, this request has been reduced by $235.0M from that previously included in the March 1981 FYDP, with a net reduction of only 26 tanks below the original plan.

Summary

Production—schedule is achievable; risk is acceptable.

Performance—operational performance is superb; RAM-D acceptable—improvements needed.

Costs—reductions achieved—more expected; program is adequately funded.

Fielding—on schedule.

In summary, the M1 Abrams tank has met the challenge of achieving production in a period of 7 years from the start of development and has demonstrated conclusively that it moves, shoots, and survives better than any tank in the world. It is a formidable tank offering a much needed improvement in fighting power to our divisions. Production and fielding has slipped from the original schedule but remains essentially on the track we established last year.

Not all problems are solved yet. Ample opportunities for improvement remain. I assure you that we will do our best to solve the problems and take advantage of the opportunities. This notwithstanding, the accomplishment to date are impressive. What remains is for us to build on these accomplishments, improving the performance of the tank and the efficiency with which we produce it. We shall do both. I am assured by our new prime contractor of their full commitment to the achievement of these objectives.

This tank provides our soldiers with the armored capability and growth potential necessary to meet and defeat the formidable threat posed by our potential adversaries in the 1980's and beyond. It must be produced and fielded as rapidly as possible consistent with prudent management. I respectfully request your continued support.

Written Statement by Col. Peter M. McVey, Chief, European Materiel Fielding Team, Abrams Tank System

Mr. Chairman: I am Col. Peter McVey, chief of the Abrams tank system materiel fielding team in Europe. With me are M. Sgt. Rex V. Kinney, the NCOIC of the team and Sfc. William Corkran, platoon sergeant of the first platoon, A Co., 3rd Battalion, 64th Armor, 3rd Infantry Division (Mech), the first company of the first battalion to receive M1 Abrams tanks in Europe. We are privileged to appear before your committee to report on the fielding effort of the Abrams tank in Europe. I have been asked to address the fielding concept, training program, soldier acceptance of the vehicle, his ability to employ, troubleshoot, and maintain it, the current status of repair parts, and key problem areas. Master Sergeant Kinney, Sergeant First Class Corkran and I will answer any questions you may have concerning the vehicle in the field. We have little expertise in the areas of costs and program direc-

tion. We are here to address how to train personnel to maintain and employ the tank.

MOS TRAINING AT 7TH ARMY CATC

Military occupational speciality course	Instructional hours
45E M1 organizational turret mechanic	125.6
63E M1 organizational automotive mechanic	174.4
41C direct support optical repairman	24.0
34G direct support fire control repairman	200.0
45K direct support turret mechanic	200.0
63G direct support fuel and electrical mechanic	200.0
63H direct support automotive mechanic	200.0

The concept of fielding the tank in Europe is to centralize training at the 7th Army combined arms training center (VILSECK). The training program is a two-phase operation. First, the mechanics at unit and support levels are taught maintenance and fault isolation (troubleshooting) tasks in accordance with their military occupation specialty, then return to their own organizations. The specialties taught and course length are shown on this chart. The second phase of training is for 64 days and is for the entire battalion. The training is staggered with each company spending 42 days in training. Shown on this chart are the subjects taught to the tank crew members. Each member is trained on his individual station: Driver, loader, gunner, and tank commander. The crew performs crew drills, fires tank tables VII and VIII and completes training at the Hohenfels training area with a 4-day company field exercise. The transition training program is designed to train soldiers who already have armor experience and make them proficient in the M1 Abrams tank. Because the tank is easy for the crewmembers to operate, the difficult training task is to have them move slowly enough to ensure that they understand the theory of the fire control system. The Abrams tank will respond much faster than any other vehicle they have ever employed. During gunnery training crews will consistently fire on triple targets, engaging the first within 8 seconds and hitting all three targets in 35 to 40 seconds. The best time in Europe to date is open fire in 4 seconds and cease fire in 21 seconds, having hit all three targets.

TANK COMPANY SCHEDULE

Activity	Training day [1]
Publications/safety/PMCS	1–2
Drivers training	3–4
Machine gun training	5
Station training	6–9
Preventative maintenance checks and services (PMCS)	10–11
Ranging/Tracking/TGT acquisition	12–15
Phase I test	16–18
Crew drill	19–21
Boresight and zero	22–24
Crew drill, CSE	25–28
Transition gunnery	29–34
Radio march to Hohenfels training area	35
Company training exercise	36–38

[1] Four day initial handoff period to issue manuals, special tools, test sets, and tanks not included. Total transition requires 42 days.

The most difficult training task is tactical employment of the vehicle. I do not know how to teach experience. As a rule, senior noncommissioned officers, company commanders, and batallion commanders adapt to the tactical application of the M1 much faster than second lieutenants and brand new tank commanders. I believe this is because senior personnel have experience in other tanks to fall back on so they concentrate on getting the most out of the M1's capabilities. The young tank commander is as much concerned about map reading and land navigation as he is about using his vehicle correctly. The solution to this problem is practice in the

classroom, and on the vehicle during tactical exercises. It is critical that each tank commander know his vehicle, the terrain he will fight on and the batallion's operation plan. There are no short cuts in this process, it is hard work and long hours. It costs money but must be done. The armor center at Fort Knox has developed tactical manuals that state the doctrine for use of the Abrams tank system. The task before the Army in the field is to apply this doctrine with the vehicle. The Abrams gives the Army the capability to move a tank batallion quickly to the place where it is needed. We know an individual Abrams tank can move cross country at high speed. The Army must be able to move companies and batallions at similar speeds while maintaining command and control and be capable of fighting enroute and immediately on arrival in the objective area. It can and must be done. We have capable tankers and able leadership in 3/64th Armor and they understand the task ahead of them—gain experience with the M1 Abrams tank system.

The soldiers who have the vehicle, like it.

The smile on their faces and the gleam in their eyes say it all! Despite often being cold, wet and covered with mud during training, the payoff is the successful placing of steel on the target. Let us now move away from the thunder of the guns and address the soldier who must maintain, repair, and sustain the M1 Abrams in the field. That soldier is the mechanic. He needs test sets, tools, repair parts and, in some cases, major assemblies to do that task. These items have been issued to him. Mechanics across the board are impressed with the ease of maintenance. The mechanics in the 3/64th Armor and D Co., 703rd Maintenance Batallion of the 3rd Infantry Division (MECH) have demonstrated that they can keep the M1's operational readiness rate well above 90 percent.

Today, there are 129 M1 tanks in Europe, 63 in the hands of the 3rd Battalion, 64th Armor, 8 at the 7th Army combined arms training center and the remainder waiting to be issued to the 2nd Batallion, 64th Armor of the 3rd Infantry Division (MECH) in VII Corps. The tank will average 250 miles during the transition training program. They are used 24 hours a day from the 18th day of training until the completion of training on day 42. We have replaced two engines, one rear module, one transmission and three final drives in over 10,000 total miles of operation. The three companies that have completed the 90 kilometer road march from the Grafenwoehr training area to the Hohenfels training area have all done so without losing a tank to maintenance. In the turrent we have experienced moderate failure rates. The power control units for the thermal night sights have caused problems. Several line of the sight units have also been replaced. The problems identified to date are not highly technical and do not require a vast technology search, rather, they are quality control and production problems. For example, capacitors and resistors burn out or leave circuits open when they should be closed. From the tanker's and mechanic's point of view, these are irritations as long as there are sufficient printed circuit cards, spare parts, and repair parts available on site so that repairs can be made quickly and the tank returned to service.

The M1 Abrams tank in Europe can and is being supported by soldiers and normal support units. The soldier in the field is gaining the experience required to support the tank. Right now the density of tanks, trained soldiers, and M1 repair parts is low. It is my belief that until there are several battalions of M1 tanks fielded in Europe and CONUS thereby providing increased scope and depth in repair parts stockage and a broad range of technical and repair experience held by the maintenance and support personnel, we must not rely totally upon standard procedures for support. The Army must provide additional repair parts during the transition period. We are doing that with the Abrams.

The system for support of the M1 Abrams tank in Europe is in place. Maintenance personnel are doing the job, with the exception of select high technology items, from organizational through depot level. With an increased level of stockage of repair parts, operational readiness rates will remain high in Europe. The commander of 3/64th Armor's first report to his commanding general on his monthly operational readiness rate was that 2 of 63 M1's were not operationally ready. At the time of the report, one company had completed training, one company was on a 4-day field exercise, one company was firing tank table VII, stressing the vehicle, and the fourth company was doing crew drills. As an operational commander, I would be very happy with that rate.

Congress has provided the wherewithal and the Army has given the tank force a winner. The soldier in the field will prove it is a winner on the first day of the next battle.

Mr. STRATTON. We are starting to run out of time here.

Let me ask what has happened with the changeover from Chrysler to General Dynamics?

General BALL. Sir, I would be happy to respond to that. This became official yesterday. What has been Chrysler Defense CDI is now General Dynamics Land Systems Division.

Mr. STRATTON. Do we have the same people, the same managers?

General BALL. I cannot respond. At least at the top level of the division there will be a change. Mr. John Day, who had been the president of CDI remains with Chrysler. So the division head will be someone new. I do not know who.

Mr. STRATTON. Isn't it a little risky to switch over the production at a time when you are right in the middle of trying to beef up your production? General Maloney is talking about the risk to the Nation and here we bring in somebody else that hasn't handled this problem at all.

General BALL. Sir, I have had discussions with a number of the top management officials in General Dynamics. To this point I am particularly well pleased with the approach they have taken. They have brought in a high-level team, cutting across all functional disciplines to assess and analyze where the problems were, not only in the tank production plants, but in the subcontractor and vendor structure.

They have withdrawn now to make their assessment and to analyze their findings. The president of General Dynamics has told me he has been physically present during this and that he will spend at least 1 month and probably 2 months in Detroit as they assimilate the task that they have or as they assimilate the activity.

Mr. STRATTON. You haven't answered my question. Don't you think that is a little risky?

General BALL. Sir, I think our risk has diminished.

Mr. STRATTON. I beg your pardon?

General BALL. I believe our risk has diminished.

Mr. STRATTON. Why has it diminished?

General BALL. Financial problems have plagued the Chrysler Corp. The need to very closely manage overtime, capital investment and cash flow, have been disruptive. Strong commitment from a company with a much stronger financial position and the willingness to dedicate the right kind of management talent to the task, I think, in spite of short-term turbulence, will be a great improvement. We have seen a decrease in productivity over the past 60 to 90 days due to uncertainty, but if the followthrough and the approach continues to be as it has been to date, I have high confidence in their ability to manage the function well.

Mr. STRATTON. Why wasn't the Congress consulted on this matter?

General BALL. Sir, I cannot respond to that. I was not working at that level with it.

Mr. STRATTON. You mean you weren't close enough to the Army high command as the project manager of this most important weapons system so that you didn't even know why the Congress wasn't consulted? Don't they cut you in on these things?

General BALL. Sir, I had a great deal of discussions, yes, but this was not a subject that was discussed with me.

Mr. STRATTON. You figured it didn't matter whether Congress was consulted or not. Did you recommend that?

General BALL. No, sir, I did not.

Mr. STRATTON. So you thought it wasn't really necessary. We just go along with whatever you recommend.

I understand that to bring the diesel engine into production the TACOM, whatever that is, has estimated it is going to cost another $300 million and take about 40 months. Why is it going to take 3½ years to bring into production an engine concept that was initially in development testing about some 6 or 7 years ago?

General BALL. Sir, you are correct. It was in initial development some years ago. It was in the GM prototype of the X-M1 tank. This is a high technology engine. There are a great number of risk areas in the engine. I think this is illustrated quite well by the fact that we had 51 significant failures in 218 hours of testing.

Given the proper testing and the find-fix approach, I have no reason to think it could not be brought to maturity and to an acceptable level of performance, but it won't happen quickly.

Mr. STRATTON. Well, I was assured by Teledyne that they could turn this thing out without any problem. What were the problems that developed?

General BALL. Sir, there was a range of problems. Two of the most significant enhancements being applied to the engine were a variable area turbo charger and variable speed cooling fans to enhance the performance of the engine. There were difficulties in each of these areas in the test. There is a wide range of failure modes that have been experienced in the testing to date.

Mr. STRATTON. What do you know about the residue problem in the Leopard's experience with the German 120-millimeter gun?

General BALL. Sir, if the reference to residue is a flaming residue, we do not have evidence of this. If the reference is to an ash that is left in the chamber, some particles or some residue after combustion, yes, there has been some of that that has been observed. For more specifics on that I would ask the PM who is seated behind me, Colonel Appling to address it. We have not seen the flaming residue or a fire hazard problem with it.

Mr. STRATTON. Well, I don't know about the flaming residue, but this again was another problem that we had with the Sheridan which was trying to do exactly the same thing and the resident was a problem in that you couldn't put another round in the chamber and fire it whether the residue was flaming or stuck or what-have-you.

It is my understanding that the Germans have run into that problem and this was another reason that I opposed the German gun. Now we apparently are likely to walk into that same problem ourselves, are we not?

General BALL. I am extremly sensitive. I was associated with the ammunition business when we had Sheridans in the field and I was in Germany when we had an unfortunate accident resulting in some soldiers being killed.

We are testing all ways that we know how to test and will continue to test to verify that we do not have the hazards in the combustible cartridge case before any final decision is made.

I am particularly cautious of that area. We want to assure that not only from a safety standpoint, but that the case is rugged enough to withstand the stockpile to target sequence in handling and that we don't have breakage and damage of the case in our inventory.

Mr. STRATTON. Have you actually ordered the production of the 120-millimeter guns?

General BALL. Guns for testing only, Mr. Stratton.

Mr. STRATTON. I know you have got a prototype up there.

General BALL. Yes, sir.

Mr. STRATTON. But you are not going into full production?

General BALL. We are some time from a production decision.

Mr. STRATTON. The gentleman behind you was going to testify on the gun residue.

Colonel APPLING. Yes, Mr. Chairman. I am Colonel Appling, the project manager for Tank and Main Armament Systems. With regard to the residue allegation of which you spoke, in the fall of 1980 the German user encountered a problem with rounds occasionally sticking in the chamber and being incapable of being extracted.

There was at first speculation, and we thought ourselves, that this might be residue related. As it turned out after exhaustive investigation, and this was in our own country as well as in Germany, it turned out not to be a residue problem.

What had happened was that the case was misdimensioned. The case had been so designed so that there was not adequate clearance between the round and the chamber which created an interference fit.

The reason that we thought initially that it might be a residue problem is that as in anything that burns there is a certain amount of fine ash left behind. Since the clearance was inadequate, the occurrence of even this small amount of normal ash tended to aggravate the problem.

The Germans have designed a fix for this combustible case. It has now been officially adopted by the German Government and it is in production. We have received the drawings of the know-how and the information under our license and are preparing to test that solution in the United States.

I would add, Mr. Chairman, that this past December we conducted a very stringent, what we call a Panama test, a tropic storage test of the 120-millimeter combustile case ammunition specifically to determine if we had a residue problem as was the case with the Sheridan. The rounds passed the test excellently.

Mr. STRATTON. How did the Germans fix it, by boring out the gun further or by changing the cartridge?

Colonel APPLING. They changed the cartridge, sir. The case design was such that for ease of assembly and ease of manufacturing it was manufactured with a slight taper in the case so that there was a high point on the case.

In order to redesign this without diminishing the strength of the case or having to change the interior design of the projectile, the case has now been changed so that it is perfectly cylindrical. The taper has been designed out of the system.

Mr. STRATTON. We are building our own caseless cartridge ammunition for our gun, aren't we?

Colonel APPLING. Yes, sir, we are, in prototype development.

Mr. STRATTON. Have we tested that?

Colonel APPLING. Yes, sir, we have tested it at considerable length and it was U.S. cases that I was speaking of that we tested at Panama last December.

Mr. STRATTON. But there is no residue problem with them?

Colonel APPLING. No, sir.

Mr. STRATTON. Incidentally, we have this document that I read from earlier, the responses by Secretary Marsh to questions which we asked earlier, including the M1 and others.

If there is no objection, this will be included in the record at this point.

[The following information was received for the record:]

ADVANCED ATTACK HELICOPTER (AAH) AND HELLFIRE MISSILE

1. (U) AH-64 Subsystems To Be Changed For Production.

a. (U) QUESTION: Under these conditions, which were known in advance, how could the Army conclude that the AH-64 was ready for operational testing in the summer of 1981?

(U) ANSWER: Engineering Design Test 5 was conducted during December 1980 - January 1981 with 28 flight hours. The objectives were to assess readiness of the aircraft and subsystems for entry into OT II and to determine any safety-related problems. The test report stated that the YAH-64 was not ready for OT II at that time and that two deficiencies and the shortcomings should be corrected prior to OT II. Correction of the deficiencies and all of the shortcomings that were mission-related or safety-of-flight items were accomplished and verified prior to OT II. Based on completion of these and other efforts, the Army determined that it was ready to conduct OT II in June-August 1981.

In relation to the TADS and engine production configurations, it had been the Army's plan to conduct OT II with the pre-production TADS and the -700 engine.

b. (U) QUESTION: What will the test results contribute to the production decision?

(U) ANSWER: The objectives of OT II were to evaluate mission performance; survivability; and reliability, availability, and maintainability (RAM) against goals established by the Army's Training and Doctrine Command representing the user of the fielded system. The results of the test clearly show that the AH-64 is ready for production, superior to the present attack helicopter and provides the unique capabilities of night and adverse weather operation and indirect fire. However, intensive work should continue to improve TADS reliability, 30mm gun reliability, and system maintainability. Since the inclusion of the -701 engine and the production TADS are low risk, and will improve the system beyond the OT II results, it is the Army's conclusion that the OT II results remain valid.

c. (U) QUESTION: What limitations should be imposed on making projections from the operational tests results about the production aircraft?

(U) ANSWER: The evaluations of mission performance and survivability remain valid with no limitations. The RAM evaluation provides an estimate for the hardware configuration that was tested in OT II. As hardware changes in the future, the impact on RAM will be assessed and the results incorporated into the RAM growth for the system. It should be noted that the AAH RAM requirements are values to be achieved at maturity - the point in time when 100,000 hours of fleet operation following deployment are achieved. For the AAH, this will occur in Calendar Year 1986. To date, the Army has applied established scoring and evaluation techniques to assess Operational Test II and development test

data for the prototype helicopters. The Army assessments have shown that, for every RAM parameter except aircraft mean time to repair and TADS subsystem reliability, the maturity objectives have already been met. In these two instances, they are meeting the growth curve predictions toward achieving their requirements by the prescribed maturity milestone date.

d. QUESTION: What plans does the Army have to test the AH-64 in its production configuration to fill in the gaps left open by the operational test?

ANSWER: The TADS configuration used in Operational Test II is not the final production design but did have all major design features except two. The first feature is microminiaturization of TADS which is a conservative program with low technical and schedule risk. All hybrid component design, fabrication and tests were completed successfully. Engineering models are built and tested. Fabrication of three of the boxes is complete, with the fourth box to be completed by mid-February. Qualification testing is scheduled to begin February 10, 1982 and will be completed by mid-June. This effort and the flight test to verify system integration are low technical risk. The relationship of these test schedules to the production schedule provides a significant degree of flexibility should a problem arise.

Secondly, testing of two production lasers is also nearing completion. Engineering acceptance tests already accomplished on the production laser have shown that the design is sound and meets requirements. One unit has accumulated over 2 million shots, and the other unit over 6 million shots. Qualification testing will be completed in February 82.

The engine that has been used in AH-64 flight tests is the T700-GE-700. The production engine, T700-GE-701, is not a new engine but incorporates a low-risk modification based on a design feature of the T700-GE-401 LAMPS engine. The tests for the -701 engine are proceeding well. A total of 7.2 hours of flight testing has been successfully completed. The Army does not envision any complications in marrying the airframe and engine since there are not any dimensional, weight, attachment, or significant stress changes.

Additionally, production plans for the AH-64 include comprehensive engineering flight test validation of the operating characteristics of the total system. There is a dedicated test period to collect, during a high demand period, RAM data to augment that data collected on other tests. The first attack company equipped with AH-64 will conduct an exercise of tactical employment and operation in Fiscal Year 1985. During this high use period, dedicated RAM collection will further augment existing data. Altogether, a rigorious, detailed examination of the production APACHE will augment the OT II effort.

2. Target Acquisition Designation Sight (TADS)

a. QUESTION: When will TADS development be complete?

ANSWER: Except for the completion of some qualification testing, development is already complete. TADS has completed a competitive development phase in which the winning TADS system successfully demonstrated all major performance parameters in a competitive flyoff. Substantial system redesign for producibility, maintainability, and reliability was undertaken and successfully completed during a follow-on maturity phase development program. In this phase, TADS/PNVS endurance testing was successfully completed in December 1981 and the last remaining TADS development flight test, the TADS Validation Test, was completed in October 1981. The majority of the TADS/PNVS system-level qualification testing has been accomplished with the remainder scheduled to be completed by April 1982. Flight testing of the entire AH-64 (to include TADS) is ongoing at St. Paul, MN to evaluate the aircraft in icing conditions. The maturity phase program will be completed in June 1982 as originally scheduled.

b. QUESTION: How does the current TADS development schedule and cost estimate compare with the estimate at the time the maturity contract was awarded?

ANSWER: The maturity contract was signed on 9 April 1980. The target price was $45.775 million and the Army's estimate of cost was $58 million. The current estimate at completion is $94.0 million. The cost increase included $4.0 million of Army-directed changes which evolved during the development program and cost growth primarily in producibility engineering planning, (PEP), upgrade of the competitive-development units to the pre-production configuration and in the automatic test equipment (ATE) development.

Although intermediate milestones for various efforts slipped, the original contract date for completion of 30 June 1982 is still expected to be met because the ATE development is the pacing effort and is on schedule.

	DATE	ACTUAL
Contract Award	10 Apr 80	9 Apr 80
Configuration Changes Critical Design Review	30 Jun 80	19 Jun 80
ATE Preliminary Design Review	30 Sep 80	29-30 Sep 80
Technical Manual Delivery	31 Jan 81	31 Jan 81
Functional Configuration Audit	30 Apr 81	30 Oct 81
Completion of 500 Hour Endurance Test	May 81	15 Dec 81
Completion of Production Readiness Review	31 Jul 81	11 Aug 81
Completion of Systems Qualification Specification Testing	31 Aug 81	Est 31 Mar 82
Completion of All Contract Requirements	30 Jun 82	Est 30 Jun 82

c. QUESTION: Why has the micro-miniaturization effort slipped? What effect will this have on developing and testing diagnostic software?

ANSWER: The micro-miniaturization effort has slipped for several reasons. A significant delay was caused by a redirection in the effort to

reduce production risk which called for the fabrication and qualification of a full-up TADS electronics unit (TEU) rather than just two cards and the box as originally planned. This program change caused a schedule delay while the additional hardware was fabricated. Other schedule delays were caused by various small design and fabrication problems associated with a first-time design-and-build program. Emphasis has been placed on getting each step right before proceeding with the next and schedule has suffered accordingly. An engineering model of each micro-miniaturized box has been successfully checked out, and three of the four qualifcation units have been built and are undergoing qualifcation testing.

Diagnostic software is not impacted by the schedule delay because the software is developed in the software-development laboratory.

d. QUESTION: Are there any design changes that have resulted or are expected to result from the qualification and endurance testing of the TADS? Would those changes be qualified prior to the first production article testing? If not, how much risk is involved in making retrofits during the early production runs?

ANSWER: Yes, there are some design changes resulting from qualification and endurance testing. However, these changes are not major and pose no increased production risk. Each is being evaluated for its impact on the unit's qualification and a determination as to what is necessary for assurance that complete unit qualification is attained. This assurance may be analytical, limited testing/operation, or requalification. This effort is scheduled to be completed well in advance of first article testing, which is prior to the first TADS/PNVS delivery. First aircraft delivery is seven months after TADS/PNVS delivery. In addition, because extensive production acceptance testing will be conducted on each unit as it is built any significant problems should be detected early. Because of this conservative schedule and the small size of the first production lot (13 units) the risk in making retrofits, if required, in early production runs is low.

e. QUESTION: When will TADS flight testing be completed and what information is expected from the test?

ANSWER: The last TADS development flight test, the TADS validation test, was completed in October 1981. The purpose of the test was to demonstrate that the maturity-phase hardware meets performance requirements. The results of this test were that TADS met or exceeded all DCP performance requirements. Icing tests of the entire AH-64 (including TADS) are ongoing, and additional confirmatory flight tests of the entire system (such as first article, 4 box micro-miniaturization, etc) will be conducted during the production phase.

f. QUESTION: Have improvements been made to enable the TADS forward looking infrared (FLIR) sensor to meet its minimum resolvable temperature (MRT) requirements? How much testing has been accomplished to demonstrate this?

ANSWER: Yes, the TADS FLIR initially demonstrated its MRT requirement during functional qualification testing on 24 July 1981. The principle failure to meet MRT requirements in early maturity-phase FLIRs was due to noise introduced by internal wiring harness layouts. Further verification of the correction was provided when the same FLIR successfully passed a second MRT test on 9 September 1981.

g. QUESTION: Why has the TADS manual tracking been unable to meet laser pointing accuracy requirements? What work remains to be done regarding manual tracking?

ANSWER: TADS exceeded manual tracking pointing accuracy requirements when using the day TV or direct view optics (DVO) during the TADS validation test. Manual tracking performance was less than desired when using the FLIR due to several reasons, including: improper tracking gains, insufficient copilot/gunner (CPG) training, and unrepresentative thermal targets. The tracking gains were adjusted for day TV and DVO sensors prior to testing but were not properly adjusted for the FLIR. This has been corrected. Planned CPG manual tracking training prior to flight testing was not conducted due to range scheduling problems not associated with TADS. The second FLIR manual tracking flight for two CPGs showed a dramatic improvement in proficiency over the first flights, indicating a strong learning curve. The use of unrepresentative thermal targets in a day-time test unrealistically complicated the tracking problem. A further test of manual tracking performance with properly trained CPGs and proper control gains is scheduled during tower testing in April 1982.

h. QUESTION: Why has the TADS been unable to meet laser beam divergence and minimum energy requirements? What improvements are planned?

ANSWER: The TADS production laser has met laser beam divergence and minimum energy requirements. No further improvements are planned.

i. QUESTION: Will minimum resolvable temperature, manual tracking pointing accuracy, laser beam divergence, and minimum energy requirements be met by the production TADS or will requirements be lowered?

ANSWER: The TADS production hardware will meet all currently stated requirements. Although the laser has met the original minimum energy requirement, it was lowered by 20 per cent to provide longer laser life and and an adequate production margin. This will not degrade the TADS ability to meet all range performance requirements.

j. QUESTION: Describe the TADS boresighting problem and what has been done about it? If the problem is not corrected, what would the operational effect be?

ANSWER: The boresighting problem which surfaced during OT II was caused by an electrical shift in the vidicon raster positions in the dayside and nightside TV cameras. This raster shift was caused by overheating of the camera internal components which resulted in some intermittent circuits in the rigiflex motherboard and electrical biases due to a temperature sensitive component. This problem had not occurred in the competitive development phase cameras. In the maturity-phase redesign, a cooling fan was eliminated from the cameras. Tests have now shown that the boresight shift is eliminated by using the cooling fan. In addition, the rigiflex motherboard and the temperature sensitive components are being redesigned to eliminate these susceptibilities. A tower test with the modified cameras with fan is scheduled for April 1982 to demonstrate the fixes at the system level.

3.(U) Laser Rangefinder/Designator Unit (LRF/D)

a. QUESTION: Why is system level qualification of the LRF/D not required prior to first production article testing?

ANSWER: The TADS system-level qualification includes a maturity-phase laser with a portion of the design changes and provides a determination of any system-level impact on the laser. Results show that the laser operates with relative independence from system-level influences on laser performance. Thus, two production lasers with all the design changes are scheduled to complete an extensive qualification test in February 1982. This approach is low risk and cost and schedule efficient.

b. QUESTION: With the large number of design changes, what assurance is there that the unit will work when installed on the TADS?

ANSWER: All of these design changes have been successfully implemented in other military systems (e.g., PAVETACK) and, therefore, are considered low risk. The PAVETACK laser is built by the same vendor (International Laser Systems) and is performing well in production systems. Two production lasers have completed 80 per cent of LRU-level qualification tests. One of the production-configuration lasers will be integrated with the microminiaturized TADS system and flight tested in early 1983. The production laser will be integrated with a production TADS 6 months prior to delivery of the first unit. This schedule provides ample time to address any problems which may remain; hence overall risk is low.

c. QUESTION: When is the earliest the Government will know how successful the new (polarizer) source is?

ANSWER: 1st quarter of Calendar Year 1983.

d. QUESTION: Should the effort turn out to be unsuccessful, what other fall-back position does the Government have?

ANSWER: The Army decided to develop a second soruce for polarizers to reduce schedule and price risks. Should this present effort be unsuccessful, the Army would re-evaluate whether the risks are acceptable or if still another source should be developed. At present, there is no shortage of polarizers nor is there any imminent likelihood of a shortage.

4.(U) T-701 Engine

(U) QUESTION: How does the T-701 derive its power increase over the T-700? What major components (e.g., compressor, combustor, turbine) have been changed for the T-701 using the T-700 as a base? How does the Navy 401 engine differ from the T-700 and T-701?

(U) ANSWER: The T-700-GE-701 engine derives its power increase over the T-700-GE-700 by increasing the compressor airflow by approximately 2 per cent and the turbine temperature by 53°F. The performance changes/improvements are as follows:

(1) Increased airflow for 1st stage compressor by minor redesign of compressor blades.

(2) (U) Turbine temperature increased 53°F by electrical control unit (ECU)/ hydromechanical unit (HMU) modifications, which also provides automatic contingency power.

(3) Rematch of power turbine based on (1) and (2) above.

The following reliability improvement items over the T-700 also have been incorporated in the -701 and -401 engines:

(1) Primerless combustor

(2) Improved turbine cooling

(3) Improved seals

(4) Improved oil pressure measurement

The primary difference between the Navy 401 engine and the -701 engine is that the -401 uses a manual contingency feature and the -701 uses an automatic contingency power feature. Also, corrosion resistant coatings and materials utilized by the Navy are not required for the Army environment and have been omitted.

In summary, the minimum changes required for the -701 equate to 44 of 1800 parts, all of which have been technically assessed as low risk. In addition, the -701 engine achieved first flight in the APACHE on 15 January 1982 and is now engaged in -701 qualification flight testing. All flights to date have shown trouble-free -701 engine operation. If the cost of incorporating the -701 had been used solely for a weight reduction program, undoubtably the mission gross weight could have been reduced to meet all performance requirements. However, this would not have provided the margins that allow significant ordnance options for the combat commander. The Army conducted an analyses of trade-off of increased power or weight reduction, primarily to cover operations in the high temperatures of the mid-East. The -701 option was clearly the best choice for the Army.

4. T-701 Engine continued

b. (U) QUESTION: What is the shaft horsepower for the T-700, T-701, and Navy 401 engines? How do the operating temperatures and pressures of the three engines compare.

(U) ANSWER:

		ARMY T-700-GE-700			ARMY T-700-GE-701			NAVY T-700-GE-401		
SL-59°F		SHP	SFC	MGT	SHP	SFC	MGT	SHP	SFC	MGT
	Contingency	-	-	-	1732	.465	866°C	1732	.465	866°C
	Intermediate	1543	.469	835°C	1694	.464	850°C	1690	.464	848°C
	Max Cont	1251	.477	760°C	1510	.471	800°C	1437	.471	779°C
4000' -95°F										
	Contingency	-	-	-	1443	.473	901°C	NO NAVY REQUIREMENT		
	Intermediate	1168	.483	835°C	1295	.480	850°C			
	Max Cont	869	.513	760°C	1066	.506	800°C			
Tropical Day SL-90°F										
	Contingency	NO ARMY REQUIREMENT			NO ARMY REQUIREMENT			1701	.472	901°C
	Intermediate							1540	.476	848°C
	Max Cont							1205	.498	779°C

SHP = Shaft Horsepower
SFC = Specific Fuel Consumption
MGT = Measured Gas Temperature

NOTE: Variances in ratings reflect operational and mission requirement definition differences between the Army and Navy.

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4. T-701 Engine continued

c. QUESTION: Will the T-701 be less reliable and/or durable than the T-700 given the higher workload demanded of the engine components?

ANSWER: The -701 engine should be more reliable and/or durable than the -700 engine. Reliability items including primerless combustor, improved turbine cooling, improved seals in three areas, and improved oil pressure measurement are being incorporated in the -701. These changes result in fewer parts, lower average metal temperatures, and improved sealing.

The use of the -701 engine in the AH-64 aircraft, without growth in the drive system, allows the opportunity to "flat rate" the engine. Additional -701 power is only used for improved hot-day high altitude performance or as required during a single-engine emergency. As the helicopter is operated at low altitudes and/or moderate ambient temperatures, the -701 operates at a lower temperature than the -700, thereby reducing the temperature effects on the engine and airframe components and improving reliability.

d. QUESTION: How applicable is Navy testing of the -401 engine to the T-701, given that the two engines will have completely different operational environments?

ANSWER: Navy -401 engine testing is applicable and has been applied to the experience base for the -701 engine. Dedicated testing on the -701 engine is as follows:

(1) Completed 150-hour qualification test.

(2) Has demonstrated over 3700 of required 5000 hours of equivalent life to date in the on-going accelerated mission endurance tests.

(3) Is undergoing APACHE -701 flight qualification tests.

e. QUESTION: How well can the increased infrared signature of the T-701 engine be masked?

ANSWER: The -701 operates at a lower exhaust gas temperature for a given power compared to the -700, resulting in a reduced signature. Moreover, since the -701 engine has a greater exhaust flow rate, the improved pumping action of the suppressor results in increased cooling with better metal cooling and reduced signature. Therefore, it is expected that flight test data will establish that the IR suppressor meets specification requirements.

f. QUESTION: How will the combination of a more powerful engine lifting a heavier aircraft affect vibation, and stress on power train components?

ANSWER: Since the -701 engine is "flat rated" with no growth in the drive system, the additional power will be used only for improved hot-day performance or emergency single engine operation. During normal operations, the stresses and vibrations imposed will remain the same as if the helicopter were operated with the -700.

4. T-701 Engine continued

g.(U)QUESTION: What demonstrations of the T-701 have taken place which substantiate its power over the T-700? How does this translate into higher vertical rate of climb and cruise speed?

(U) ANSWER: The -701 engine has completed a 150-hour qualification test. Each engine delivered for flight tests has test cell operations to demonstrate its performance prior to shipment. This power available is checked against the specification requirements. Using the power available, against the power required to hover, forward flight, etc., at various gross weights, a performance curve can be established. Based on flight data on power required for AH-64 operations, and power available based on test cell calibrations, the APACHE, at the primary mission gross weight, has a vertical rate of climb increase and cruise speed increase, with the -701 engine, of approximately 800 FPM and 8 KTS, respectively.

9. AH-64 Reliability, Availability, and Maintainability

a. (U) QUESTION: Although the Army reports that the reliability goal of 17 mean hours between mission failure was achieved, this calculation relates to 23 failures directly chargeable to hardware that caused mission aborts. The total number of failures identified was 117. Explain the following:

— 27 hardware failures identified that would have caused potential mission aborts.
— 27 other failures that could not be adequately diagnosed thus the cause being identified as "unknown".
— 10 failures simply identified as "other".
— 22 failures attributable to crew and maintenance errors.

(U) ANSWER: The configuration tested surpassed its primary goals of mission reliability and MMH/FH. The planned changes for production will only further enhance these measurements, not degrade them. The Army mechanics performed 75 percent of the Operational Test OT -II maintenance tasks unassisted. The data clearly shows that the Army mechanic is capable of supporting the AH-64 in the field. Test and diagnostic equipment performed well during OT-II. Production incorporation of that portion waived for the test will enhance maintainability beyond the levels experienced to date. Failure scoring was rigorously performed during OT-II in accordance with Army regulations. Mission reliability failures were charged when they caused the actual mission to be aborted.

— Problems found during scheduled inspections which, in the opinion of the scoring committee, could potentially cause a mission to be aborted were listed as potential mission aborts.

— Events where maintenance personnel could not verify the symptoms experienced by the flight crew and could not find a failed part were listed as "unknown".

— The category "other" includes non-chargeable events such as:

(1) Failures which occurred prior to the start of OT-II which were appropriately charged to development testing even though not repaired until after the start of OT.

(2) Modification work orders where a configuration change was made.

(3) Failures stemming from developmental work that are corrected for production.

— Crew and maintenance errors were charged as such only when sufficient evidence existed that an error was made by personnel and was not directly related to the hardware.

b. (U) QUESTION: What will the Army do about TADS reliability since the analysis showed that it achieved only 20 mean hours between failures (MTBF) against a goal of 100? Will the requirement be lowered?

5b. AH-64 Reliability, Availability, and Maintainability - (Continued)

(U)ANSWER: The TADS functional reliability requirement has been realigned into two more meaningful parameters: mission reliability and system reliability. During OT-II the TADS demonstrated an acceptable mission reliability of 82 flight hours MTBF. The mission reliability requirement at system maturity (100,000 flight hours) is 125 flight hours MTBF. System reliability includes hardware failures that do not cause mission aborts. The TADS demonstrated a system reliability of 20 operating hours between failure. The PM review of this parameter, based on the complexity of the system and compared with other similar electro-optical devices, has concluded that a goal of 100 operating hours between failure is excessive. The Army requirement for system reliability is now set at 63 operating hours between failure at maturity (100,000 operating hours). Analysis of each failure which occurred during OT-II has resulted in design changes in the production TADS which support a projected 39.5 hour MTBF in the first production TADS. Further, a program to assure that this goal is achieved is now on-going. The program is the reliability assurance warranty where the contractor assesses the repairs, conducts a reliability analysis and test effort, and guarantees achievement of the system reliability requirement by February 1985, two years before the system achieves maturity.

c.(U)QUESTION: How reliable are the maintainability data since 49 percent of the maintenance actions were performed with contractors' assistance or solely by the contractors?

(U)ANSWER: Data from OT-II show that the soldiers did perform 75 percent of all maintenance tasks without contractor assistance. A review of the data shows that some contractor participation took place because of:

(1) Several peculiar development anomalies including engine coking caused by contaminated fuel, a TADS boresight shift resulting from an overheated component on an electronic circuit board, and APU-start problems caused by an obsolete air valve.

(2) Design modification installed by the contractor which were not the responsibility of OT-II maintenance personnel.

(3) Uncorrected failures still on the aircraft when delivered for OT-II.

(4) Some troubleshooting procedures in the maintenance manuals which did not apply to the two older aircraft in the test.

Excluding these causes, only 18 percent of the tasks recorded had necessary contractor involvement. This level of support can well be expected of early prototype aircraft. The low maintenance manhours per flight hour resulting from the test by soldiers with limited "hands-on" AH-64 experience show that Army mechanics can maintain the aircraft under field conditions and do it very well.

d.(U)QUESTION: What level of contractor maintenance support is the Army planning on for the AH-64 when it is fielded?

5d. AH-64 Reliability, Availability, and Maintainability - (Continued)

(U) ANSWER: The Army is planning to have full soldier maintenance support for the fielded aircraft for all unit and intermediate level maintenance tasks. As is the policy of all newly fielded systems, the Army will follow the provisions of AR 700-4 and locate three contractor field services representatives (one airframe, one engine and one TADS/PNVS) at each geographical location to which the AH-64 will be deployed. After one year, contractor representatives will be replaced by Army field service representatives. These numbers of technical representatives are normal and are comparable to those now utilized by the BLACK HAWK system. From OT-II data and review of corrective actions, it is expected that technical representatives will be needed for less than 10 percent of the maintenance tasks for the production aircraft. At the depot level, the Army will use contractor maintenance for the first 3 years. This decision was made to avoid unnecessary higher costs until sufficient field experience and data is available to permit the procurement of only depot-supported items.

e. (U) QUESTION: Explain why the maintenance manhours per flight hour (MMH-FH) recorded in the operational test far exceeded the goal (4.7 versus a goal of 14.4) while the mean time to repair (MTTR) fell short of the goal (1.7 versus a goal of 0.9).

(U) ANSWER: Both of these goals have been established for the fielded fleet at 100,000 hours of operation or the so-called maturity point. Through the modular maintenance concept and state-of-the-art design features, the maintainability of the AAH far exceeded expectations. The MMH/FH of 4.7 was one-third the requirement even though maintenance errors, maintenance from non-chargeable failure, flight crew maintenance-related tasks and maintenance caused by obsolete parts were all retained in the data base.

The MTTR was assessed at 1.4 by the independent evaluator using OT-II data. This is considered on the growth curve to meet its requirement of .90 at maturity.

There are several things that occurred during OT-II that tended to drive the MTTR up but had little effect on MMH/FH. These were:

(1) Unique problems on the TADS, engines and APU which proved difficult to troubleshoot, caused the MTTR to increase by as much as 40 percent but made very little impact on MMH/FH.

(2) Some of the waived test equipment not intended to be a part of the OT-II testing and different aircraft configurations with maintenance manuals prepared for the pre-production AV-06.

f. (U) QUESTION: Explain the problems associated with three of 20 major dynamic components that are not meeting the durability requirement.

(U) ANSWER: Seventeen of the 20 major dynamic components are already exceeding the durability requirement for the maturity point of 100,000 hours. By maturity, the other three items (the nose gearbox (NGB), intermediate gearbox (IGB), and the rail rotor swashplate) will also meet the 1500-hour requirement.

5f:

The T/R swashplate was removed several times for "noisy" bearings which were sent to the vendor for analysis. Subsequently, it was reported that the analysis revealed no problems in two of the bearings and they were returned to stock as serviceable for further use. One other bearing was found to have spalling.

The ICB has experienced a number of cracks in the diffuser mounting leg. This has been caused by the mounting leg riding on fasteners in the structure. A modification will be installed in production which will solve this problem. In the meantime, cracked parts are welded and reinstalled.

The MGB has had chronic oil leakage/seepage problems around the filler cap and through the shaft oil seal. An improved seal was installed on the cap. Changes for the shaft seal leakage include interior baffles, installation of a magnetic seal, and an improved finish on the shaft. In addition, the seal installation procedure and lubricant are being changed. Testing is continuing to determine the effectiveness of the modifications.

g.(U) QUESTION: What remains to be done in terms of developing and testing the 30 millimeter gun, and demonstrating its reliability?

(U) ANSWER: Beginning on February 15, 1982, a 10,000 round reliability firing test of the complete area weapon subsystem will take place on a ground test stand. This test will supplement the successful 7600-round firing demonstration from the aircraft completed on January 15, 1982.

6A. Automatic Test Station (ATS)

a. (U) QUESTION: How many test program sets (TPS) were available during the recent operational test? How many remain to be developed and tested? When will all the test program sets be developed and tested?

(U) ANSWER:

			COMPLETION DATE
AVIM	TPS AVAILABLE AT OT II		
AVIM	TPS TO BE DEVELOPED	1	JUN 84
*DEPOT	TPS TO BE DEVELOPED	183	SEP 86

*DEPOT MAINTENANCE TO BE PROVIDED BY CONTRACTOR FOR 1st THREE YEARS.

b. QUESTION: How many line replaceable units were aboard each AH-64 during OT II? How many of these had faults which the ATS was called on to diagnose? How many test program sets were utilized?

ANSWER: One hundered and one different LRU's were aboard each AH-64 during OT II. Seventeen different LRU's had 32 faults which the ATS was called on to diagnose. In each instance the ATS correctly diagnosed and isolated the fault. Additionally, since failures were occurring so infrequently during the test, the remaining TPS's were exercised against presumably good LRU's in stock. Fifty-one different test program sets were utilized 482 times to diagnose the LRU's in stock. In each instance the ATS correctly diagnosed the LRU. In eleven of these LRU's, the ATS correctly isolated faults which were repaired, retested and returned to stock.

c. (U) QUESTION: What is the development schedule for the electro-optical bench? How sophisticated is it? How sensitive will it be to temperature and humidity changes, movement and leveling?

(U) ANSWER: The E-O bench design started in Apr 80. A preliminary design review was held in Sep 80 and a critical design review in Sep 81. A complete E-O bench is in test now at Martin Marietta. The mini-augmentation, which is that portion of the E-O bench for testing vidicon sensors, was available and used successfully at OT II for both maintenance and identifying a latent design error. One E-O bench will be delivered to Hughes in Oct 82 and installed in the field station for follow-on evaluation with soldiers to be completed in Jan 84.

Operation of the E-O bench is no more difficult than the ATE station itself. The operator will plug in cables and mount the unit under test with a quick release clamp or a few captive fasteners. Adjustments will be guided by digital readout, and the computer in the AN/USM 410 will evaluate and printout pass, fail, and what to replace. Maintenance of the E-O bench will be aided by self-test programs identifying replaceable modules which will be returned to depot for repair.

The E-O bench will operate with specified accuracy in a sheltered environment with up to 70 per cent humidity and a 65 to 90 degree F temperature range. In storage it will withstand, without damage, minus 30 to plus 160 degree F and 95 per cent humidity. The ISO shelter has air conditioning to provide the

6A. Automatic Test Station continued

required operating environment with outside temperatures from minus 25 to plus 125 degrees F. The 15-G shock, 1.5-G vibration at 5 to 50 herz design specification for the E-O bench provides for on-and off-road movement in air suspension vehicles with 50 per cent margin. In operation, the E-O bench is air isolated from the shelter floor. The shelter has approximately 3-foot long leveling legs and is normally set up level to within one degree. The E-O bench air isolators are self-leveling and can provide two degrees of final leveling. In sum, the E-O bench is well within the ability of the soldier to operate; and its sensitivities to temperature, humidity, movement and set up is well within the environmental range of field operations.

d.(U)QUESTION: When will all the ATS pieces (hardware and software) be brought together and tested for the first time? When is ATS environmental and mobility testing scheduled aboard the International Standard Organization (ISO) shelter? Who will conduct and evaluate this test?

(U)ANSWER: ATS hardware and software will be brought together in Nov 82 and will begin testing in Jan 83. Test program sets availability for testing and fielding is: AVIM, Jul 84; depot, Sep 86. Environmental and mobility testing of this production-configuration ATS is scheduled for Mar through Jun 83 at White Sands and Aberdeen Proving Ground respectively. This testing will be accomplished by the contractor and evaluated by the Government, and will have follow-on field testing with soldiers before the 1st unit is fielded.

e. QUESTION: When will user testing (including a physical teardown logistics demonstration) be completed on the ATS? How much time does this leave before the AH-64's initial operational capability?

(U)ANSWER: The ATS physical teardown logistics demonstration is scheduled for Oct 83 and an ATS follow-on evaluation (FOE) of the complete production ATS is scheduled for Feb through Mar 84. Both FT/LD and FOE are conducted with soldiers. This allows 19 months prior to IOC for correction of any deficiencies. AH-64 ATS will not be breaking new ground for fielding ATS. The Army will have approximately thirty van-mounted ground system ATSs operating by the time AH-64 systems are required for fielding in Sep 84.

f.(U)QUESTION: How risky is the task of repairing printed circuit boards in the field? Has it ever been done before?

(U) ANSWER: The risks of repairing printed circuit boards in the field are low. The Army has been successfully performing board repair in the field since 1971. In 1977, a survey was conducted at direct and general support units in Hawaii, Okinawa, Korea, Europe, Ft. Ord, Ft. Lewis, Ft. Huachuca, Ft. Hood, and Ft. Bragg. The survey revealed that 16 different MOSs had received sufficient training in their respective courses and were successfully accomplishing PCB repairs in the field. Thirty-nine of fifty-two supervisors stated that PCB repair was being successfully accomplished as low as the division level. Since it is planned to repair the AH-64 field-repairable PCB's at Corps or higher units, risk is assessed as being low.

g.(U)QUESTION: If the ATS for some reasons is not available for the AH-64, what back-up means of supporting the aircraft is planned? How will this affect AH-64 readiness?

6A. Automatic Test Station continued

(U)ANSWER: There is no reason to assume that the ATS will not be available for fielding the AH-64. However, back-up procedures, should they be required, consist of identifying the faulty LRU by means of the on-board Fault Detection/Location System; replacing the faulty LRU from field-stocked spares; and returning the faulty LRU to depot for repair. These procedures would sustain combat readiness; however, they would increase up-front LRU spares costs.

h(U)QUESTION: What is the development and procurement funding profile for the remainder of the ATS program? What are the estimated total development and procurement costs? Is the ATE program fully funded in the 5 year plan and planning annex?

(U) FUNDS ARE IN THEN YEAR DOLLARS

(IN MILLIONS)

RDTE	TOTAL	SUNK	82	83	84	85	86
Hughes (Phase II)	16.0	16.0					
TADS/PNVS (CD and Maturity)	13.6	13.6					
Extended GSE*	28.2		3.5	11.8	12.9		
TPS AAH	43.9			3.0	13.5	16.1	11.3
TPS TADS/PNVS	4.4			.5	1.5	1.6	.8
TOTAL	106.1	29.6	3.5	15.3	27.9	17.7	12.1
PRODUCTION ATS							
Hughes	34.4		7.3	3.2	13.3	7.0	3.6
TADS/PNVS	62.5	3.3	13.2	22.5	6.8	10.1	6.6
TOTAL	96.9	3.3	20.5	25.7	20.1	17.1	10.2

The ATS program is fully funded in the five year plan and planning annex.
*Production ATS configuration hardware, integration and testing.

i.(U)QUESTION: What is the estimated unit procurement cost of the ATE? How is this broken down by major component (e.g., eclipse computer, test program sets, electro-optical bench, ISO shelter)? What is the estimated procurement cost of the electronic repair facility?

(U)ANSWER: The estimated unit production cost of one ATS, in Fiscal Year 82 dollars, is $6.58 million.

6A(U) Automatic Test Station continued

Electro-Optical Bench	1.14M
Electronic Station (TADS/PNVS)	.29M
AN/USM 410 Core	1.16M
AAH Peculiar (excludes TADS/PNVS)	.97M
GENRAD 2225A Digital Card Tester	.07M
1 Set TPS (AAH and TADS/PNVS)	1.71M
2 Trailers, 2 ISO Shelters, 1 ERF, 2 EPU & 6 Air Cond.	1.24M
	6.58M

ERF estimated procurement cost - $230,000.

6B. Automatic Test Station (ATS)

a.(U)QUESTION: Will the ATS' reliability be any better than the core computer system recently tested? What plans are there to improve this reliability?

(U)ANSWER: ATS reliability will be substantially better than the AN/MSM-105V(1) recent DT III at Ft. Huachuca. It must be understood that, during the DT III test, the system was subjected to environmental test parameters that the system will not see under normal operation. Also much of the V(1) reliability problems at this DT III were due to the microwave rack which demonstrated a reliability of only one per cent. The microwave rack has never been a portion of the AAH (V(2)) configuration. Deficiencies with the V(1) configuration, applicable to the AH-64 ATS, are being corrected, and these improvements will be incorporated in the AAH version this year. Further, maintenance of the AAH version will be supported by the new skill performance aids (SPA) manuals which will greatly enhance the soldier's capability.

b.(U)QUESTION: Why is the system so sensitive to temperature and humidity changes? Can anything be done to reduce its sensitivity? Is 24 hour environmental control the only option, and is this feasible given the ATS' mobility requirements?

(U)ANSWER: AN/USM-410(V) is of commercial quality design containing off-the-shelf automatic data processing and TMDE. As a result, the system when exposed to extreme environment reacts in a manner typical of commercial equipment. The testing results have demonstrated that the environmental control units of the van containing the system afford the protection necessary for the system to satisfactorily operate at temperature and humidity extremes. When returning the system to operation from periods of non-operation at extreme environment, the system may experience anomalies which will require corrective maintenance to return the system to operational status. No additional environmental protective measures are deemed necessary as the current system can perform its mission in a field environment. Environment control for 24 hours is not required.

c.(U)QUESTION: Why is the computer system so difficult to maintain in a field environment? Will the ATS be even more complicated to maintain given its sophisticated peripheral equipment? Will the Army be able to maintain the ATS in the field without contractor support? Will a highly skilled operator/maintainer be required for the ATS?

(U)ANSWER: The Eclipse 130 computer and its disc, the ATS computer system, are extremely low failure rate items, and no failures were reported on the computer during DT III or AAH OT II. The complete van-mounted ATE itself was difficult for the DT III maintenance personnel due to deficiencies in the system's new self test and draft technical manuals. The self-test program is presently being corrected and the technical manuals will be refined and reprinted in the skill performance aids (SPA) format. The use of the SPA format manuals, together with the debugged system self-test, will greatly simplify the maintenance of the ATS.

The Army plan is to maintain the ATS in the field without contractor support. Unit personnel supplemented by teams from the Army post-deployment software support facilities and the Army depot(s) will maintain the equipment. A technical representative from the contractor is expected to be on site during the first year of deployment.

6B. Automatic Test Station continued

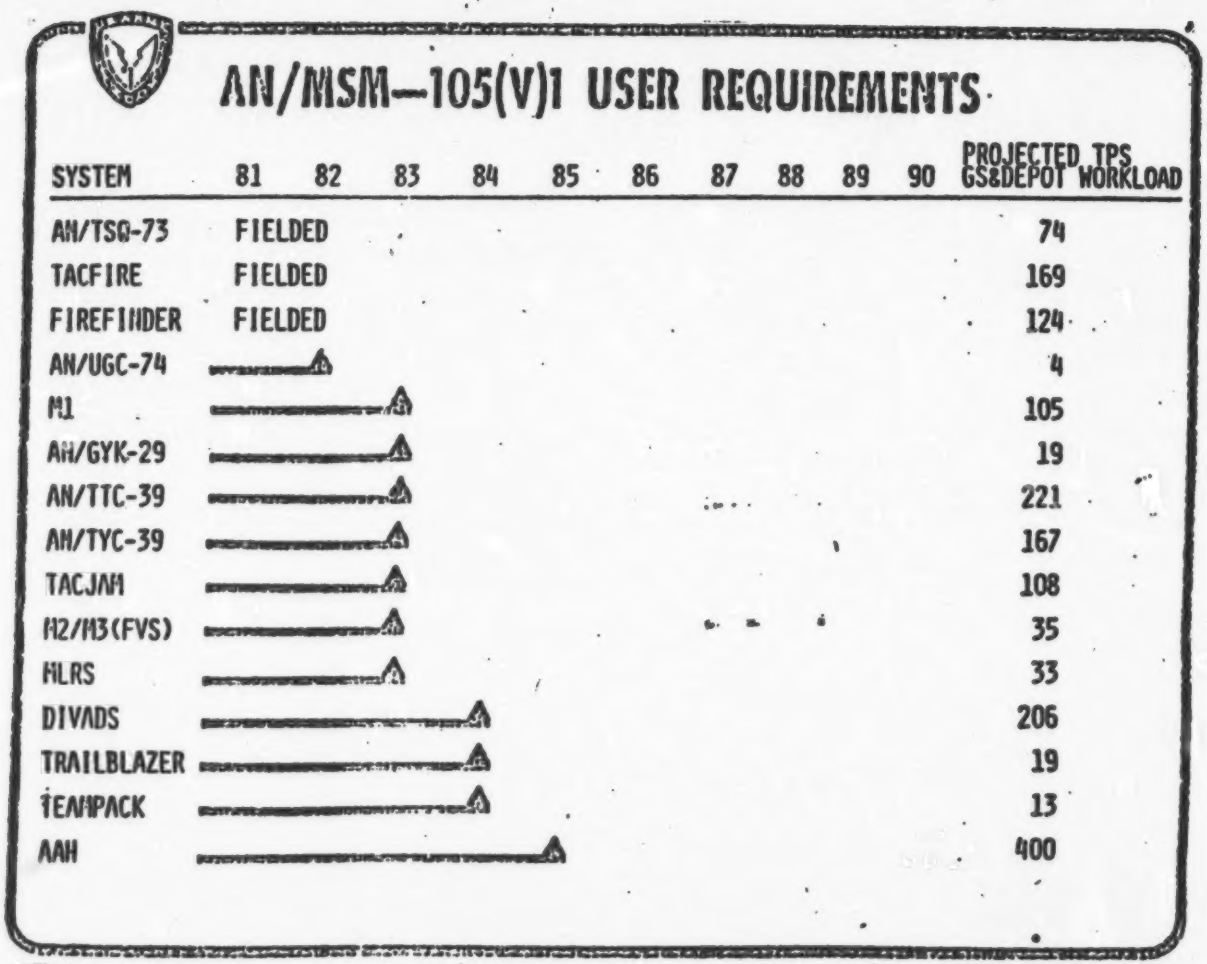
During the AAH OT II, soldier operators stated that the ATS was extremely easy to operate. Regarding maintenance of the ATS, the MOS 35C being trained by Fort Gordon is a highly skilled individual. This high skill level, together with the improved system self-test and 5PA format manuals, should result in another favorable report from the ATS maintainers in future tests.

d.(U)QUESTION: What weapon systems will the AN/MSM-105V2 (AH-64 ATS) and the AN/MSM-105Vi ground system test station eventually support? When will support of these systems be phased into the respective test stations?

(U) ANSWER: The US Army Aviation Research and Development Command is evaluating the AN/MSM-105(V)2 as a candidate for support for all US Army aviation assets; but until cost analysis studies are completed, the AAH is the only system firm in its ATS requirement.

There are twenty-one users scheduled for the AN/MSM-105(V)1 in addition to the AAH. Attached is list and fielding schedules of the AN/MSM-105(V)1 users.

AN/MSM-105(V)1 USER REQUIREMENTS



628

628

AN/MSM-105(V)1 USER REQUIREMENTS (CONT)

SYSTEM	81	82	83	84	85	86	87	88	89	90	PROJECTED GS & DEPOT	TPS WORKLOAD
PLRS												58
MANEUVER CTRL SYSTEM												120
DGM												75
AN/TILQ-33												94
QUICKFIX												19
RPV												41
GPS NAVSTAR												43

629

629

6C. Automatic Test Station (ATS)

a.(U) QUESTION: How often can the ATS be expected to move at the division level? How will this affect its availability to conduct aircraft maintenance? What is the required availability of the ATS? What has been demonstrated to date?

(U) ANSWER: The present van-mounted AN/MSM-105(V)1 has previously passed the Munson road test. The AH-64 ATS is scheduled for this test, Mar through Jun 83. Mounting of the ISO shelters on air-ride vans makes this test a very low risk. The AH-64 ATS goal for shut-down, move, set-up and warm-up is eight to ten hours. Project manager ATSS is assessing methods to reduce the warm-up time. Based on the AH-64 workload utilization analysis and the frequency of moving, system utilization will have adequate margin to meet the workload requirement under wartime conditions.

b.(U) QUESTION: What procedures have been developed for moving and setting up the ATS? Have they been tested?

(U) ANSWER: Detailed approved procedures for movement and set-up of the complete ATS have yet to be developed or tested. Briefly, the scenario envisioned for peacetime is to unload all the equipment, including the ISO shelters, and utilize shop power where available. During wartime, the only components to be removed from the trailer are the combination heater/air conditioner and the ground power units. The ISO shelters will remain on the trailer to reduce movement time. Items packaged to protect them from the shock and vibration of the move will be unpacked.

The shelters will be connected, expanded, and leveled, and components positioned within the shelter. System power will then be applied to stabilize the ATE components. After inspection, the system self-test will be accomplished and operation initiated. Mobility testing of the complete ATS for AH-64 is scheduled for March through June 1982.

c.(U) QUESTION: What development remains for the ISO shelters?

(U) ANSWER: The ISO shelters presently being utilized were developed by the US Army Natick Laboratories and are being fielded by US Army Troop Support and Aviation Materiel Readiness Command to replace vans and other shelters used at AVIM to house the various aviation shop sets. The only "development" presently planned is to reinforce the floor of one of the two ISO shelters to support the weight of the completed electro-optical bench.

d. QUESTION: How will the ATS be protected from temperature and humidity changes during a move, during which time it will not be environmentally controlled.

(U) ANSWER: Short moves (6-8 hours or less) are not expected to require protection for temperature as the temperature change (soak time) should not be a problem. This will be verified during the forthcoming development testing. However, humidity and temperature protection for longer moves will be required. This is planned to be accomplished using portable heaters, air conditioners and desicants.

e. (U) QUESTION: How sensitive are the ATS components to leveling?

(U) ANSWER: The leveling requirement for ATS components is $\pm$ 2 degrees. The ISO shelters are provided with integral footings and levels accurate to $\frac{1}{2}$ degree. The E-O bench air isolators are self-leveling. No leveling problems

6C. Automatic Test Station continued

are anticipated for field use.

f.(U)QUESTION: What protection does the ISO shelter offer against electro-magnetic interference and damage from conventional munitions? What plans does the Army have for increasing such protection?

(U)ANSWER: The construction of the current ISO shelter offers limited electro-magnetic interference by virtue of its aluminum construction. The protection against conventional munitions is almost nil. There are development efforts ongoing to upgrade the ISO shelters that will provide protection against EMI, RFI, CBR, and nuclear. Problems associated with this development are mainly due to weight increases of the shelters.

g(U)QUESTION: What is being done to mask the infrared signature of the ATS?

(U) ANSWER: No developmental efforts are being undertaken to suppress the IR signature of the ATS. When employed in a divisional support area, 30 to 50 km to the rear, the ATS IR signature will be no different than numerous other systems deployed in the same vicinity. As a matter of SOP, all troop units use various methods of field expedients to minimize signatures of their assets. These include camouflage screens, sandbags, depressions, etc. The divisional support area is normally located far enough to the rear so that conventional weapons, other than from enemy aircraft, do not pose an immediate threat.

7. Fault Detection/Location System (FD/LS)

a.(U)QUESTION: How much diagnostic software has yet to be developed for the onboard fault detection/location system? When will development and testing of the software be completed?

(U)ANSWER: The FD/LS system at the unit maintenance level consists of the aircraft indicators, caution warning light system, and skill performance aids, as well as the computer-controlled, automated, built-in-test. The onboard FD/LS software, with the exception of TADS/PNVS software, is complete and has been validated in both the Mission Equipment Development Laboratory (MEDL) and the prototype flight vehicles. The TADS/PNVS FD/LS software has two components; the automatic diagnosis and the man-in-the-loop (prompts) diagnosis. The automatic diagnosis software has been completed and the micro-miniature components are presently undergoing qualification testing. The prompts portion of the software will be complete in the Fall of 1982 and will be checked-out during the micro-miniature flight testing on vehicle AV06 in early 1983. A formal demonstration of the TADS/PNVS FD/LS software will be performed during the TADS/PNVS first-article testing in the Fall of 1983. Upon completion of the flight test program, the micromin hardware will be integrated in the Hughes software checkout facility with a full set of aircraft LRU's. During this period, an extensive fault simulation program will then be conducted. A formal fault insertion program is also planned for PV02 during first article acceptance testing. This effort will utilize printed circuit board assets from the ATE program and will be conducted with military maintenance personnel prior to fielding of AAH's.

The system's capabilities were adequately demonstrated to the Army's independent evaluators and logistics experts at OT II.

b.(U)QUESTION: When will the reliability of the system to correctly diagnose faulty components be proven, given its limited testing during OT II? What reliability has been demonstrated to date?

(U)ANSWER: A fault simulation program will be conducted in the Hughes software checkout facility prior to delivery of the first production aircraft (PV01) along with a formal fault insertion program of the entire aircraft FD/LS system which is planned during first article acceptance testing.

As part of the continuing maturation of the AAH program, data from approximately 450 flight hours will be evaluated as part of an FD/LS verification and analysis during the micromin evaluation and pilot training efforts which are planned prior to delivery of PV01. This level of effort will provide additional confidence in the current design and allow time to identify fixes and potential problem areas regarding unscheduled maintenance and ATE station workload. A similar effort is planned after delivery of PV01. A total of 2225 flight hours will be monitored, analyzed and evaluated through FDT&E in 1985. This time interval will be used to demonstrate through hands-on use and data collection, the FD/LS contribution to the MMH/FH, and mean time to repair (MTTR).

The reliability of the system to perform its intended function has been partially demonstrated by the results of OT II, where 75 per cent of all maintenance was performed by soldiers, the aircraft exceeded the MMH/FH requirement and, finally, the aircraft achieved its availability criteria. The data

7. Fault Detection/Location System (FD/LS) continued

from OT II further indicates the FD/LS was 83 per cent effective in detecting faulty LRU's. This is considered highly satisfactory based upon the limitation of the TADS/PNVS FD/LS and the condition of the aircraft wiring which had been subjected to stress from numerous removals and rework required by flight test operation throughout engineering development.

c. (U) QUESTION: Since the system utilizes the fire control computer, will there be enough computer time available for it to report component failures to the aircrew during target engagements?

(U) ANSWER: Yes. Computer time is mostly governed by the iteration rate of the system line replaceable units (LRU's); that is, the number of times per second that data from the LRU is processed in the fire control computer (FCC). When high interation rates were used to gain confidence in the system, in development the real time requirements of the FCC during target engagements were determined to be 95 per cent of available time. This percentage will decrease in production software to about 80 per cent, as a result of using "read only" instead of "random access" memory, and reducing the iteration rate of some LRU's. This indicates that there is more than adequate computer time available for FD/LS during target engagement.

d. (U) QUESTION: What additional ground test equipment would be required to augment the system? Has such equipment been developed?

(U) ANSWER: The FD/LS concept precludes the need for any special equipment for the designation and location of system faults. There has been no indication that special equipment will be required to augment the FD/LS.

e. (U) QUESTION: How will temperature and humidity extremes affect the reliability of the system?

(U) ANSWER: The AAH's FD/LS software is contained in and is distributed throughout the various LRU's which make up the AAH weapon system. All of these LRU's has been subjected to the full range of environmental tests required by MIL-STD-810 which include a 10-day humidity cycle and exposure to temperature extremes ranging from -55°C to +71°C. The FD/LS was also utilized during the climatic hangar tests and was instrumental in detecting and locating system faults during functional tests at temperature extremes.

8. Combat Mission Simulator.

a.(U)QUESTION: Why will the simulator not be available until 1989? Is there sufficient funding for development and procurement?

(U)ANSWER: A delay in the engineering development of a prototype Combat Mission Simulator (CMS) was due to a lack of RDTE funding in FY 81 and reduced funding in FY 82. The Army, however, is presently accomplishing an accelerated acquisition process that will permit delivery of the prototype CMS to the US Army Aviation Training Center, Fort Rucker, AL, not later than 1 August 1985. Immediately following the prototype delivery, the production contract for four simulators will be awarded with their delivery scheduled to start in FY 89.

The current funding profile provides the minimum required for engineering development of the prototype, and for the procurement of four production simulators.

b(U)QUESTION: Can current state-of-the-art technology satisfy the design requirement of the full-up simulator?

(U)ANSWER: The Army is pursuing a Visual System Component Development Program (VSCDP) to advance the state-of-the-art in visual simulation. The VSCDP will develop, at an acceptable risk, cost effective components for adequate fidelity to support such vital training tasks as Nap-of-the-Earth flight, target acquisition, target engagements, and offensive-defensive weapons effects. The VSCDP development effort will conclude in time for its integration into the production CMS.

c.(U)QUESTION: What steps will the Army take to support the AH-64/HELLFIRE training until the simulator becomes available? How many more aircraft, flight hours and missiles will be necessary? What additional cost will such augmentation impose on the Army?

(U)ANSWER: By using an increased AH-64 aircraft fleet, (11) AH-1 Pilot Night Vision Sensor surrogates and several part task trainers, the Army's training requirement will be met.

The US Army Aviation Training Center, Fort Rucker, AL will require seven additional AH-64 aircraft, 7290 more flight hours, 21,600 2.75 inch rockets and 24 more HELLFIRE missiles.

The seven additional AH-64 aircraft requirement will only temporarily augment the training fleet at Fort Rucker, AL, thus, do not directly impose an additional cost to the pilot training program. The additional cost of augmenting the aviation training center is $26,573,820.

d.(U)QUESTION: How crucial is the simulator to AH-64/HELLFIRE training? What is the primary advantage of having such a simulator? Without it, how much would copilot/gunner proficiency suffer given the HELLFIRE's numerous employment options?

8.d. Combat Mission Simulator - Continued

(U) ANSWER: The prototype AH-64 Combat Mission Simulator and the subsequent production version are vital to aircrew training and follow-on proficiency flying. The sophistication of the modern battlefield is becoming more difficult to replicate using existing ranges, maneuver areas and at a low training cost. The simulator provides realistic training, is inherently safer, and in a more cost and training effective environment.

The primary advantage of having such a simulator is that the Army can train a pilot better in a simulator than in the actual aircraft. A better trained pilot can be accomplished at a greatly reduced cost and with increased safety.

Without a simulator, the copilot/gunner will not have the opportunity to train under a simulated threat and stress environment, or fire an array of weapons systems in a replicated-sophisticated modern battlefield.

9.(U) Laser HELLFIRE Missile

a.(U) QUESTION: Considering these HELLFIRE employment limitations plus a cost that would be greater than an improved TOW II missile, describe the net advantages of the HELLFIRE over the TOW II?

(U) ANSWER: A comparison of major characteristics of HELLFIRE and TOW II is summarized below:

	HELLFIRE	TOW II
Range-Direct Fire(Km)	DELETED	3.75
Range-Indirect Fire (Km)		No Capability
Time of Flight to 3.75 Km(sec)		DELETED
Impact Elevation Angle (deg)	-9 to -23	+4
Warhead Penetration M Rolled Homogeneous Armor (RHA) (In)	DELETED	DELETED

(S) Effectiveness studies show that HELLFIRE out performs TOW II by large margins in fog, oil, white phosporus, anthracene, and dirt.

b.(U) QUESTION: What has the Army decided about a new propellant for the HELLFIRE missile motor?

(U) ANSWER: Plans are to continue development of a minimum smoke propellant for HELLFIRE. A one-year feasibility demonstration for minimum smoke HELLFIRE rocket motor was successfully concluded April 1981. Full scale engineering development of such a rocket motor is scheduled to begin February-March 1982, with a goal of integrating the minimum smoke motor into the third HELLFIRE production buy.

c.(U) QUESTION: What is the likelihood that anti-aircraft projectiles will hit the HELLFIRE missile and cause high order detonation with the proposed low-smoke propellant? How will this increased vulnerability to projectile hits affect the AH-64's survivability especially since critical portions of the airframe have been designed against these projectiles?

(U) ANSWER: The HELLFIRE missile is not considered to significantly add to aircraft vulnerability when equipped with a min smoke motor in helicopter application. The exact probability of an anti-aircraft projectile hit causing a high order detonation depends upon the caliber of the projectile, its angle of contact, point of contact and whether the projectile is itself explosive. In terms of an increase in vulnerable area over a bare aircraft, the addition of 16 HELLFIRE min smoke equipped missiles adds 2.1 to 4.1 ft^2, a minimal amount considering the total aircraft area. The addition of min smoke HELLFIRE rocket motor is expected to greatly increase survivability, i.e., probability of detection, with only a slight increase in vulnerability.

9. Laser HELLFIRE Missile - (Continued)

d.(U)QUESTION: How will the Army train crews to use the HELLFIRE missile in its many modes and under its many constraints without live firings? If by simulator, will the simulator be realistic and ready by the time HELLFIRE is deployed?

(U)ANSWER: During operational tests the HELLFIRE Project Office furnished the user with guidelines for employment of the HELLFIRE missile which included engagement techniques/capabilities, as well as launch constraints. Within these guidelines there were only three true launch constraints, and these included system performance characteristics such as range and launch envelopes which are inherent to all weapons systems.

The Army will train aircrews on the combat mission simulator and on part task trainers, which will replicate all firing modes of the HELLFIRE system. However, the Army will also require aircrews to fire one HELLFIRE per aircraft per year so that true-to-life training and proficiency can be maintained, as well as to verify system performance, integration, and reliability.

The HELLFIRE part task trainers and the combat mission simulator will replicate a simulated threat and battle stress environment. These training devices will be ready for aircrew training at Fort Rucker, Alabama, before a sustained pilot training rate is reached.

e.(U)QUESTION: Why does the Army plan to buy only 19 HELLFIRE training rounds, when TRADOC maintains that 400 such rounds are needed? If only 19 rounds are purchased, how much will training suffer?

(U)ANSWER: The Army production decision in November 1981 included an approved buy of 351 training missiles. This is a sufficient quantity to allow force-on-force training in all AH-64 units in accordance with TRADOC plans and taking into account the reduced quantity of AH-64s (446 from 536).

f.(U)QUESTION: With training rounds which do not actually fire, and the lack of a full-up simulator, how does the Army expect AH-64 copilot/gunners to become proficient in exercising the HELLFIRE's employment options, given its complex launch procedures?

(U)ANSWER: See answer 9d, above.

g.(U)QUESTION: What HELLFIRE tests (including bad weather, electro-optical countermeasures, and system qualification) will not be completed until after the production decision is made? When are these tests scheduled for completion, and what uncertainties will exist until they are completed?

(U)ANSWER: Flight Testing -

(1) As of February 8, 1982, this project has 3 missile guided flight tests remaining in the development program.

(a) One flight is a system qualification test scheduled for the week of February 22, 1982.

(b) One flight is to validate a missile cost reduction change and is scheduled for week of February 22, 1982.

(c) The other firing is a rain mission and will be scheduled as weather permits.

9g. Laser HELLFIRE Missile - (Continued)

(2) Engineering analysis indicates the planned tests are in the performance capability of the system. Also, similar tests have been successfully completed. No major test uncertainties exist which should impact the production decision.

(3) The above tests are scheduled to be completed prior to an anticipated production decision, late February 1982.

Other remaining tests which are not guided flight related are as follows:

(1) Laboratory environmental qualification testing is in process on the field test set (USM 410) adapters. This test is to evaluate these items against expected field handling and storage environments. Expected completion is April 12, 1982.

(2) Laboratory Environmental qualification testing and flight testing of two (2) ballistic (live motor with inert front section of missile) to proof test a launcher latch modification are scheduled to be completed by April 19, 1982.

(3) Environmental tests of the missile deicing kit are scheduled for completion by June 30, 1982. Normal laboratory environmental qualification tests do not result in total redesign of hardware but rather in minor changes to assure operation over the total storage and operational environmental spectrum. Therefore, these tests should not impact the production decision.

h.(U) QUESTION: Is the Army seriously considering other platforms for the HELLFIRE than the AH-64, such as the BLACK HAWK, the AH-1S COBRA, and ground launchers? Has the Army programed any funding for putting the missile on these other platforms?

(U) ANSWER: In response to Congressional guidance the Army will demonstrate the feasibility of launching HELLFIRE from BLACK HAWK during the April-May 1982 time frame. This program is funded.

The Army is currently studying the most feasible and best alternative uses for the HELLFIRE missile system, including a ground launched capability and BLACK HAWK helicopter.

No program other than AH-64 and BLACK HAWK have funds to integrate the HELLFIRE system.

i. (U) QUESTION: Has the Army identified why 3 of 4 autopilot gyros caused missile failures after being exposed to high temperatures? Has the Army developed a fix for the gyro yet? Are any other solutions practical?

(U) ANSWER: As of June 12, 1981, two of three missiles launched at high temperature failed due to a gyro problem. Subsequently the problem was corrected and four missiles were launched at high temperature with successful gyro operation. The solution involved better procedures and control in a brazing operation and higher pressure proof testing of a gyro sub-assembly. No additional action is considered necessary.

10. (U) Laser Threat (U)

a. (U) QUESTION: What were the Defense Science Board conclusions on the laser threat to the AH-64?

(U) ANSWER: The Defense Science Board has not completed their evaluation of the laser threat effectiveness studies and rendered a report. The Army is preparing plans and programs to cope with this threat.

b. (U) QUESTION: What countermeasures show promise against this threat?

(U) ANSWER: [illegible]

c. (U) QUESTION: If the aircrew is required to wear special equipment for their eyes to protect against laser blindness, will they be able to use other equipment well enough to perform their main functions of flying the aircraft — nap-of-the-earth and acquiring and engaging targets?

(U) ANSWER: The canopy of the AH-64 will stop the primary 10.6 micron HEL threat from affecting the pilot's eyes. Eye protection filters for the ND-YAG laser light may be required; however, they will not interfere with NOE flight. Vision outside the canopy should be adequate during the day.

11. Cost Growth

a. (U) QUESTION: What are the reasons for such a dramatic increase?

(U) ANSWER: The Sep 81 SAR reflected a February 1980 estimate prepared in constant 1980 dollars. The new program estimate finalized in Nov 81 was prepared in constant 1982 dollars. The actual inflation of 24 per cent during 1980/81 as measured by published Bureau of Labor statistics was over 40 per cent higher than the Feb 80 prediction of 17 per cent for the same period. This unanticipated inflation is responsible for $381 million of the current program increase.

Other key cost drivers have been recurring manufacturing labor hours, system program management effort, both additional and increased tooling, and additional training hardware and nonrecurring testing. The manufacturing hours have increased as the result of the recent availability of production drawings for estimating and the increased emphasis of the new management team at Hughes Helicopters on quantifying their actual experience on commercial products as applicable to the AAH. The system program management effort (which includes not only program management but systems engineering, project engineering and ILS management as well) has grown as the result of engineering effort related to systems integration and logistics support. The tooling increases are the result of the same labor hour growth as recurring hardware as well as the additional tooling to support the aircraft production rate increase from 8/month to 12/month.

b. (U) QUESTION: Why was the Program Manager not aware of the recent increases at an earlier date? Were there no on-going evaluations of contractor reported costs which would have allowed the increase and its budget impact implications to have been reported earlier?

(U) ANSWER: The latest program cost estimate was begun in June 1981 and was not finally accepted by the Army until November 1981. The labor increases identified by the new management team at Hughes Helicopters became apparent during this timeframe and the magnitude of the inflationary impact was manifested by receipt of subcontractor/vendor quotes to support the first production buy. The increases in tooling and training hardware to support the 12/month production rate were the direct result of decisions made at the November 1981 ASARC III.

c&d (U) QUESTION: What are the comparative costs for 446 AH-64 aircraft as against the same number of AH-1S COBRA aircraft? Considering the total expenditures planned for AH-64 aircraft, has the Army demonstrated that the AH-64 buy of 445 would increase total force effectiveness more than an additional buy of AH-1S COBRA TOW aircraft using equivalent expenditures?

(U) ANSWER: Based upon the current AAH COEA and the PM's analysis of the results, the procurement unit cost of the APACHE is approximately 2½ times that of an AH-1S COBRA and is at least three times as effective. The attached chart compares equal procurement cost fleets of APACHE and COBRA. Although a significantly higher number of COBRA aircraft could be procured, their O&S cost would be $14.5 billion greater and would still not be as effective as the AAH fleet. Further, the Army's force structure would need virtually total revision to accommodate the increased units and manpower (assuming the personnel can be recruited). The training base as it exists is inadequate to support the increased student load and the facilities and logistical impact of the increased fleet size, particularly OCONUS, would be tremendous.

e. (U) QUESTION: If not by increased appropriations, how is the extra one billion dollars for AH-64 procurement to be accommodated in the five year defense program? What programs were reduced or deferred in order to cover the one billion dollar increase? Show the effect in terms of reduced numbers of increased overall costs for each program that was affected.

(U) ANSWER: At the completion of the ASARC in November 1981, the Army submitted to OSD budget adjustments to programs as listed in the inclosed chart. The major resource contributors for the increased AH-64 funds were the SOTAS program that was terminated by Congress in the Fiscal Year 82 budget review and funds from a repricing of ammunition with reduced inflation estimates. The production contract for the FLIR-Augmented COBRA/TOW Sight production was slipped one quarter to Fiscal Year 1985. The field artillery ammunition supply vehicle production was reduced by 215 vehicles in Fiscal Year 1984. These vehicles will be procured in Fiscal Year 1987.

(U) EQUAL PROCUREMENT COST FLEETS

		APACHE	COBRA	DELTA
ATTACK CO'S		17	38	+ 21
AIR CAVALRY TROOP'S		6	13	+ 7
TOE OPERATIONAL AIRCRAFT		348	915	+ 567
FLOAT AIRCRAFT		53	155	+ 102
		401	1,070	+ 669
PERSONNEL				
FLIGHT CREW		835	2,196	+ 1,361
MAINTENANCE				
AVUM		2,894	8,454	+ 5,560
AVIM		588	1,310	+ 722
		4,317	11,960	+ 7,643
PROCUREMENT COST:	C82$	4,693 M	4,693 M	0
	ESC$	5,864 M	5,864 M	0
20 YEAR O&S COST:	C82$	4,875 M	11,814 M	+ 6,939 M
	ESC$	10,215 M	24,703 M	+14,488 M

641

641

(U) ADVANCED ATTACK HELICOPTER/HELLFIRE BILL PAYER LIST

($ in Millions)

SYSTEM/INITIATIVE	APPN	FY82	FY83	FY84	FY85	FY86	FY87
ADVANCED ATTACK HELICOPTER	APA	+78.3	+100.0	+559.5	+699.6	+375.2	-559.2
HELLFIRE MISSILE	MPA	+ 5.0					
COMBAT MISSION SIMULATOR	APA				+ 23.5	+ 42.2	+ 25.4
OTHER PROCUREMENT	OPA			+ 3.3	+ 6.4	+ 10.7	+ 2.8
RDTE	RDTE		+ 21.1	- 1.4	- 0.6		
SUB TOTAL		+83.3*	+121.1	+561.4	+728.9	+428.1	-531.0

*FY82 Offset is result of Congressional actions/Reprogramming action

AMMUNITION REPRICING	PAA		-106.0	-136.0	-165.0	-183.0	-195.0
SOTAS-ZERO CURRENT PROGRAM	VARIOUS		- 87.9	- 78.7	-523.1	-553.8	-535.5
AH-1S (COBRA-FACTS MOD)	APA			-104.0			+150.0
AIRCRAFT RDTE	RDTE			- 6.9			
AMMUNITION	PAA			- 95.8			+100.0
AMMO SUPPLY VEHICLE	WTCV			- 71.4			+150.0
FOREIGN NAT'L HIRES	CMA			- 30.0			
MIL PERS TVL (PCS)	MPA			- 42.0			
CMA ADJUSTMENT	CMA				-216.0		+250.0
MME/CONSTR EQ/NIGHT VISION	OPA						+235.0
SUSTAIN BLACKHAWK/RDS	VARIOUS						+376.5
TOTAL **			-193.9	-564.8	-904.1	-736.8	+531.0

**Offsets do not exactly equal since other program adjustments were made simultaneously with the AAH adjustment.

12A. Contractor Readiness for Production

a.(U) QUESTION: What are the primary areas of risk in terms of production readiness and what are the implications?

(U) ANSWER: Manageable risk exists in the following areas:

(1) Design validation of the continuing qualification tests on production items-on schedule.

(2) Documentation and validation of production software-on schedule.

(3) Planning for construction of the production facility at Mesa, Arizona-on schedule.

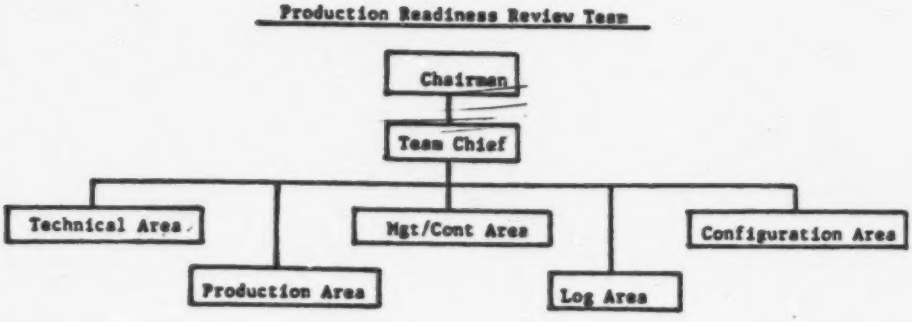
(4) Planning for manpower buildup in Mesa, Arizona - on schedule.

(5) TADS micro-miniturization and fault detection location system design - on schedule.

Both the contractor and program manager recognize and intensively manage these areas to insure minimum production impact.

b.(U) QUESTION: Describe the organization of the production readiness review team, and the number of members from the AH-64 program office versus other organizations.

(U) ANSWER: The organization at both prime contractors (HHI and MM) was as follows:



Hughes Helicopters: Total Team 34
13 AAH PMO
21 Other Organizations

Martin Marietta: Total Team 38
14 AAH PMO
24 Other Organizations

12A. Contractor Readiness for Production - (Continued)

c(U)QUESTION: Although Army Regulation 70-67 assigns the program manager responsibility for conducting these readiness reviews, is it reasonable to expect that an independent assessment can be made when the team is controlled by program office staff as in the case of the AH-64?

(U)ANSWER: The AH-64A program staff organized the effort and provided corporate knowledge to the individual production readiness teams. We think that this approach provided a realistic assessment of production readiness. In an effort to insure an objective assessment, both DA and the Defense Product Engineering Service (DOD PESO) personnel were present at all reviews and DOD PESO has prepared their own separate assessment, which concurs that the AH-64 is ready for production.

d(U)QUESTION: Although the Army and Defense Product Engineering Service Offices provide observers during the readiness reviews, are these organizations adequately staffed to provide a thorough and independent assessment?

(U)ANSWER: The Army and DoD PESO organizations that participated in the AH-64A production readiness reviews are staffed with experienced and professional individuals, and can provide a thorough and independent assessment.

12B. Contractor Readiness for Production

a.(U)QUESTION: Describe what needs to be done for constructing the new assembly plant in Mesa, Arizona and provide the accompanying schedule. Is this effort still attainable within the overall production schedule?

(U)ANSWER: AH-64A Mesa facility status:

(1) Architectural design of assembly building and drawings required for construction are complete.

(2) City of Mesa has reviewed and approved drawings.

(3) City of Mesa in process of installing water and sewer on site.

(4) Power company in process of installing power on site and has released long lead (transformers).

(5) Construction contractor (Chanen) has ordered long lead material (i.e., structural steel).

(6) Hughes has signed a lease agreement for 100,000 square feet of temporary space in the Mesa area which will permit start of employment, training and wire harness fabrication.

(7) Hughes' exposure to date approximates $1.1 million.

(8) All efforts currently are on schedule to meet planned date for initiation of construction.

(9) See attached Figure 1 for construction schedule.

(10) The required effort is attainable within the overall present production schedule.

b.(U)QUESTION: What are the details regarding the acquisition of an adequate labor force in the Mesa area? Can the critical skills such as industrial engineers and quality control inspectors be obtained in time to keep on the current production schedule?

(U)ANSWER: Hughes Helicopters, Inc. (HHI) has conducted detailed studies of manpower requirements for Mesa, including surveys of special skills required for production, as well as hiring rates required to support manpower goals. HHI has also identified those job skills which will require training and is currently developing training plans with local educational institutions at Mesa.

(1) In July 1981 HHI announced that the final assembly of the AH-64A would be in Mesa, Arizona. Prior to that, HHI hired an independent consultant to conduct a manpower survey of the Mesa area. The general conclusion of this survey was that manpower in the skills and quantity required is available in the Mesa area. The possible exception is Industrial and Manufacturing Engineers and Quality Control Inspectors for which additional personnel may have to be recruited from outside the immediate area. However, due to the general attractiveness of the Mesa area, this is not seen as a major problem.

12B. b. Contractor Readiness for Production - (Continued)

(2) Employment at the Mesa facility will build to approximately 2,000 people by mid-1985. Including turnover rate of approximately 10-15 percent, this will require an average weekly hiring rate of 15-16 employees. There is currently an applicant flow through Mesa area employment offices of approximately 20 a day. Unsolicited inquiries received from the Mesa area as a result of the June 1981 announcement plus responses to a single weekend newspaper ad (Phoenix) totaled over 1,000. Of these, 850 were skills that could be utilized on the AH-64A program. With continuous monitoring by top level management, the Army feels that HHI can meet the manpower goals.

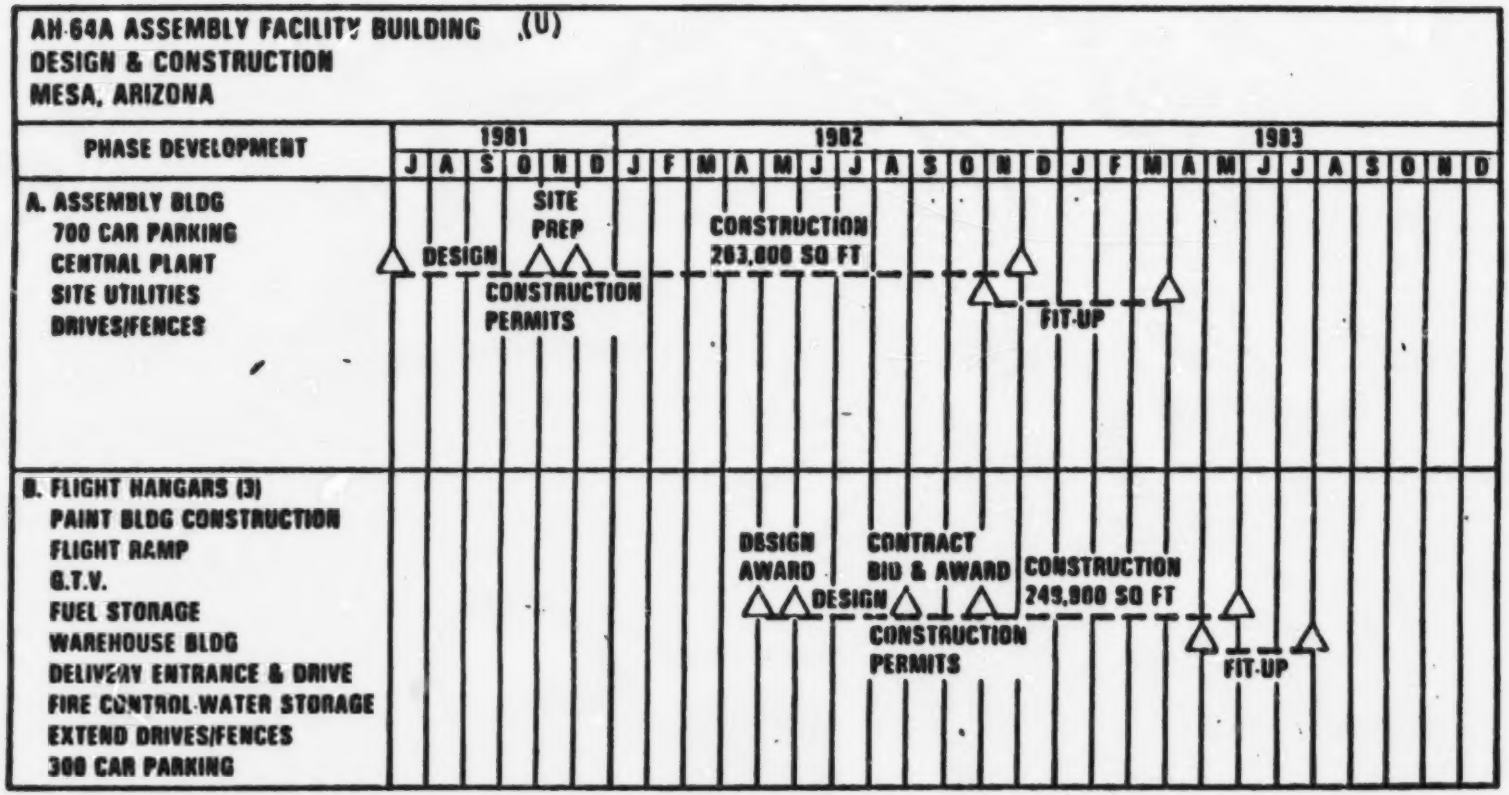
c.(U) QUESTION: How serious is the labor shortage in the Culver City, California, area where the prime contractor intends to manufacture some components before shipment to Mesa?

(U) ANSWER: The attached Figures 2-7 show the Culver City and Mesa, AZ work force requirement for the AH-64 program. The HHI employment planning has considered the B-1 program as a drain on the local work force, but in recent months the down turn in commercial aerospace programs has made available a work force which had previously been committed. HHI recruitment has demonstrated there should be no impact to production of the AH-64A.

d. (U) QUESTION: What steps have been taken to assure that the prime contractor's financial stability is sufficient to allow continued production?

(U) ANSWER: After the Defense Contract Audit Agency (DCAA) raised concerns about the financial capability of Hughes Helicopters, Inc., a week-long detailed on-site analysis, during late October 1981, was conducted by the responsible Command, Army Aviation Research and Development Command (AVRADCOM). From that review, Commander AVRADCOM (Head of Procuring Activity) concluded that HHI has sufficient financial resources, including the ability to obtain such financial resources, required to perform the APACHE program. Prior to initial production contract award, the Contracting Officer will again review HHI's financial condition to insure that the circumstances and conditions as reviewed in October 1981 have not changed in the intervening period.

AH-64A ASSEMBLY FACILITY BUILDING (U)
DESIGN & CONSTRUCTION
MESA, ARIZONA



647

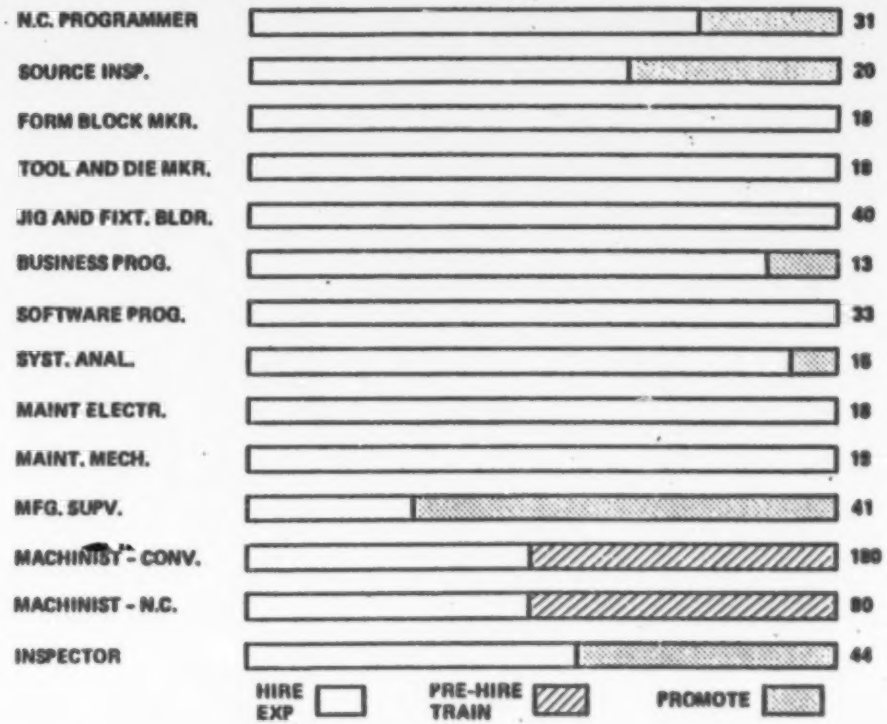
CRITICAL SKILLS NET HIRING RATE TO PEAK — CULVER CITY

SKILL	1982	1983	1984	1985	TOTAL PEAK	ADD PER MONTH
N.C. PROGRAMMER					31	5
SOURCE INSPECTOR					20	4
FORM BLOCK MKR.					18	2
TOOL/DIE MKR.					18	2
JIG/FIXT. BLDR.					40	5
BUSINESS PROGRAMMER					13	2
SOFTWARE PROGRAMMER					33	3
SYSTEMS ANALYST					15	1
INSPECTION					28	2
MAINT. ELECTRICIAN					18	1
MAINT. MECH.					18	1
MFG. SUPERVISOR					41	1
MACHINE SHOP-CONV.					180	5
MACHINE SHOP-N/C					80	2
ENGINEERING					180	6
WRITERS/ILLUSTRATORS					56*	–

*USE CONTRACT LABOR TO COVER TEMPORARY PEAK

648

CULVER CITY SOURCES OF LABOR



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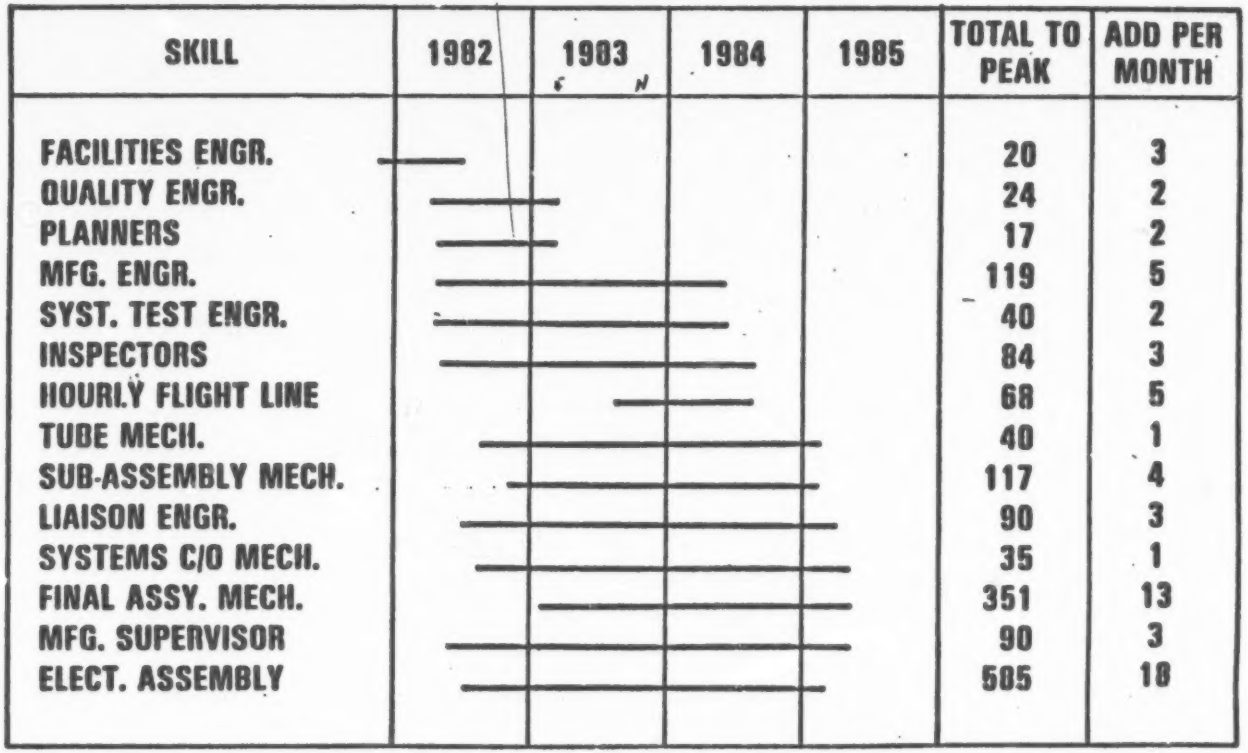
CRITICAL SKILLS NET HIRING RATE TO PEAK — MESA



SKILL	TOTAL TO PEAK	ADD PER MONTH
FACILITIES ENGR.	20	3
QUALITY ENGR.	24	2
PLANNERS	17	2
MFG. ENGR.	119	5
SYST. TEST ENGR.	40	2
INSPECTORS	84	3
HOURLY FLIGHT LINE	68	5
TUBE MECH.	40	1
SUB-ASSEMBLY MECH.	117	4
LIAISON ENGR.	90	3
SYSTEMS C/O MECH.	35	1
FINAL ASSY. MECH.	351	13
MFG. SUPERVISOR	90	3
ELECT. ASSEMBLY	585	18

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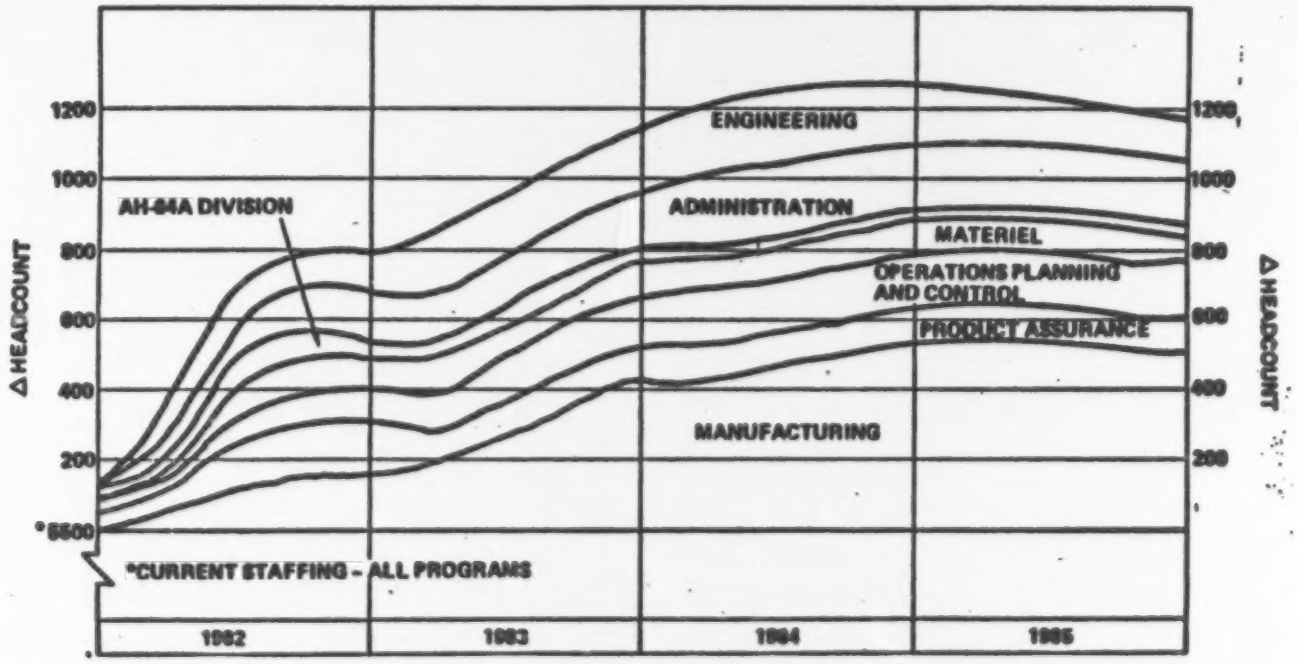
AH-64AΔ STAFFING REQUIREMENTS
CULVER CITY



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7. Fault Detection/Location System (FD/LS)

a.(U)QUESTION: How much diagnostic software has yet to be developed for the onboard fault detection/location system? When will development and testing of the software be completed?

(U)ANSWER: The FD/LS system at the unit maintenance level consists of the aircraft indicators, caution warning light system, and skill performance aids, as well as the computer-controlled, automated, built-in-test. The onboard FD/LS software, with the exception of TADS/PNVS software, is complete and has been validated in both the Mission Equipment Development Laboratory (MEDL) and the prototype flight vehicles. The TADS/PNVS FD/LS software has two components; the automatic diagnosis and the man-in-the-loop (prompts) diagnosis. The automatic diagnosis software has been completed and the micro-miniature components are presently undergoing qualification testing. The prompts portion of the software will be complete in the Fall of 1982 and will be checked-out during the micro-miniature flight testing on vehicle AV06 in early 1983. A formal demonstration of the TADS/PNVS FD/LS software will be performed during the TADS/PNVS first-article testing in the Fall of 1983. Upon completion of the flight test program, the micromin hardware will be integrated in the Hughes software checkout facility with a full set of aircraft LRU's. During this period, an extensive fault simulation program will then be conducted. A formal fault insertion program is also planned for PV02 during first article acceptance testing. This effort will utilize printed circuit board assets from the ATE program and will be conducted with military maintenance personnel prior to fielding of AAH's.

The system's capabilities were adequately demonstrated to the Army's independent evaluators and logistics experts at OT II.

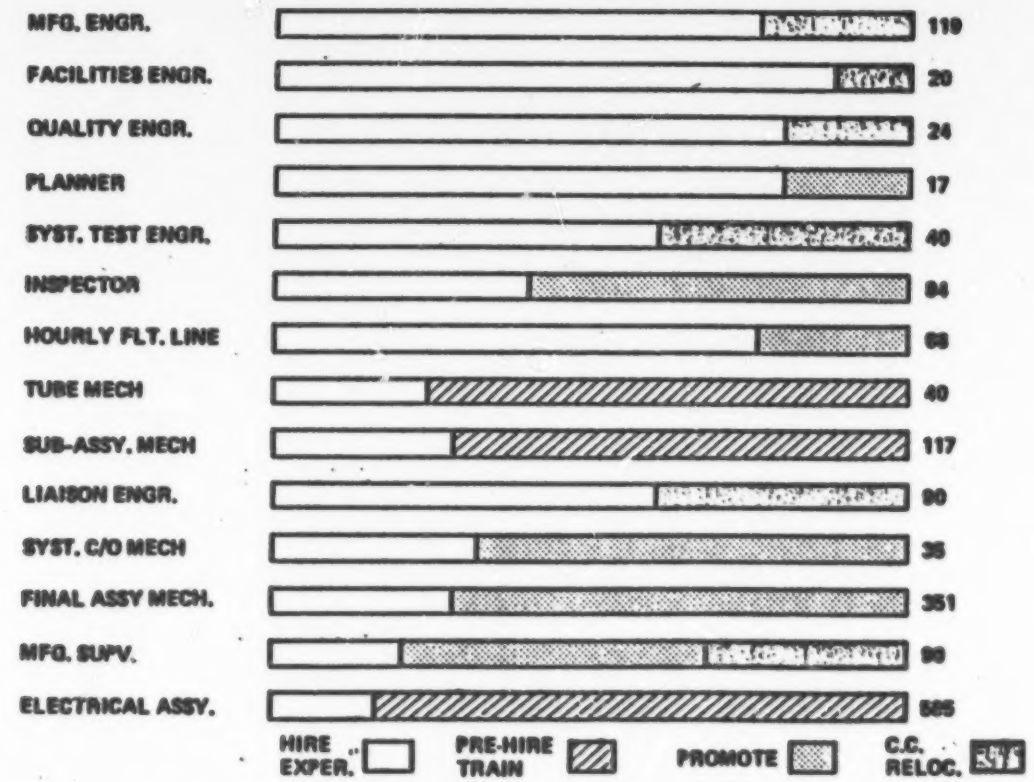
b.(U)QUESTION: When will the reliability of the system to correctly diagnose faulty components be proven, given its limited testing during OT II? What reliability has been demonstrated to date?

(U)ANSWER: A fault simulation program will be conducted in the Hughes software checkout facility prior to delivery of the first production aircraft (PV01) along with a formal fault insertion program of the entire aircraft FD/LS system which is planned during first article acceptance testing.

As part of the continuing maturation of the AAH program, data from approximately 450 flight hours will be evaluated as part of an FD/LS verification and analysis during the micromin evaluation and pilot training efforts which are planned prior to delivery of PV01. This level of effort will provide additional confidence in the current design and allow time to identify fixes and potential problem areas regarding unscheduled maintenance and ATE station workload. A similar effort is planned after delivery of PV01. A total of 2225 flight hours will be monitored, analyzed and evaluated through FDT&E in 1985. This time interval will be used to demonstrate through hands-on use and data collection, the FD/LS contribution to the MMH/FH, and mean time to repair (MTTR).

The reliability of the system to perform its intended function has been partially demonstrated by the results of OT II, where 75 per cent of all maintenance was performed by soldiers, the aircraft exceeded the MMH/FH requirement and, finally, the aircraft achieved its availability criteria. The data

MESA SOURCES OF LABOR



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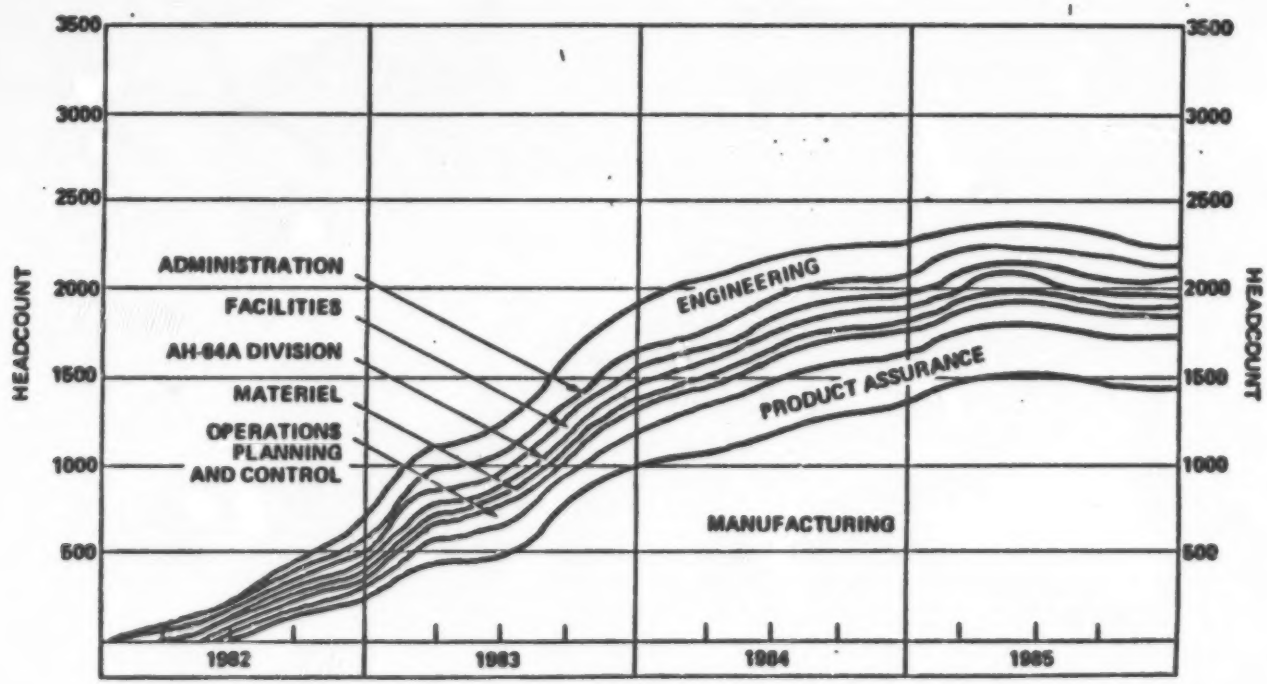
AH-64A STAFFING — MESA



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12C. Contractor Readiness for Production

a.(U)QUESTION: Do the Army's cost estimates for the HELLFIRE program include an amount for these production risks?

(U) ANSWER: The HELLFIRE cost estimate does incorporate a significant degree of risk dollars. The contractor proposals for the FY 82 procurement program are based on Fixed Price Incentive Fee (FPIF) contracts, which contain both a target price and a ceiling price. The HELLFIRE budget is within proposed target price for both the prime contractor and the major subcontractor. The HELLFIRE PM expects after negotiations are complete, to have reserve funds above target price to cover risk.

b.(U)QUESTION: Why has the laser seeker subcontractor not completed the production engineering and planning effort? Because this effort includes the design of manufacturing processes, tooling, fixtures, and test equipment, is it not very likely that production delays and higher costs are imminent?

(U) ANSWER: The Production Engineering Planning (PEP) effort accomplished during development, provided results consistent with that phase of the life cycle. Subsequent events including the enhancement program, and definition of the Ocala facility have increased the effort required to go from baseline producibility planning to production. Martin Marietta Corporation recognized a deficiency in the areas of manufacturing, process plans and tool orders, and staffed the production program to accomplish the required effort. No long term impact is anticipated in this area.

Due to the complexity of HELLFIRE, additional check points have been planned to ensure planning and facilities are adequate for production. The training program includes additional hardware to be built and tested using production documentation. This will occur approximately 9 months prior to planned deliveries. Ten proof hardware seekers will be fabricated to assist in line checkout and validation of special inspection equipment which will occur three months prior to first article testing. The program includes the expected vendor qualification of first articles, as well as, the first article test on the seeker end-item and subassemblies. The additional checkpoints should identify any shortcomings in time to implement corrections without impact on the overall program schedule.

c.(U)QUESTION: What can be done to gain more confidence that the production facility in Ocala, Florida will be ready on time? Why is the labor force of concern in Ocala?

(U) ANSWER: Construction of the expansion of the Ocala plant is currently two months ahead of schedule. The potential for delays in construction decreases with time. Issues raised during the production readiness review and subsequent problems in the COPPERHEAD program are being corrected.

The management structure provides adequate visibility for the Manufacturing Manager (Ocala). The Army Project Manager will establish a field office at Ocala to insure a timely flow of management information. Technical data will be routinely transferred via phone from test stations to the central data bank at Orlando.

12C-c. Contractor Readiness for Production - (Continued)

The Production Engineering Planning effort, considered the complexity of HELLFIRE and the challenges of a new labor base. MMC has demonstrated the capability of training a large labor force, and will transfer personnel experienced in Engineering Development fabrication and tests, concurrent with initial capabilities at Ocala. Once established, the labor force in Ocala will probably be more stable than in Orlando due to fewer competing opportunities in the immediate area.

d. (U) QUESTION: How serious is the sole source of supply situation regarding microelectronics for the laser seeker? What can be done about it?

(U) ANSWER: The Army Production Readiness Review team identified four linear large scale integrated (LSI) components as a potential trouble spot in production. Other sole source LSI's were not included because they were digital rather than linear and therefore experienced a much better yield in production. LSI's are produced by a growing and sound company, Harris Corporation of Melbourne, Florida. Harris produces three items for COPPERHEAD, and is on schedule.

Army Missile Labs at MICOM is coordinating a program with Martin Marietta and Harris provide a second production source for the FY 84 buy.

e. (U) QUESTION: Explain the problems associated with the design of HELLFIRE missile container and the seriousness of it.

(U) ANSWER: Early shock and vibration problems have been corrected and tested. Additionally, a seal and desiccant will be added to satisfy Navy/Marine Corps shipboard requirements and enhance long term storage life.

Multiple Launch Rocket System (MLRS)

1. Availability of Storage Facilities for MLRS Ammunition

a. QUESTION. To what extent are facilities available in Europe to store:

(1) MLRS basic ammunition load requirements?

(2) MLRS war reserve requirements?

ANSWER. Facilities for storage of MLRS basic load ammunition in Europe have been programed to support the MLRS fielding plan. New facilities for storage of war reserve ammunition have not been programed. Additional war reserve ammunition storage facilities must be programed from NATO funding within the total program. Funding constraints have caused a two to four year deferral of NATO funded ammunition storage projects. Near term storage of MLRS ammunition must be accommodated in existing facilities.

b. QUESTION. Congress has imposed an upper storage limit of 1 million short tons of ammunition in Europe. Has that ceiling contributed to shortage of storage space for MLRS ammunition?

(C) ANSWER. The ceiling imposed on the Army by OSD contributes to the medium/long range problems of storage capability for the Army's total DELETED DELETED ammunition objective (including MLRS) for a Fiscal Year 83 force in USAREUR DELETED . In the near term, the lack of NATO infrastructure fundings for ammunition storage construction limits total storage of all ammunition to approximately DELETED at the end of FY 84. Projected call forward schedules of MLRS war reserve starting in FY 85 adds to the problem resulting from the lack of infrastructure funding. Until NATO infrastructure funds are available, alternative arrangements will have to be established to accommodate MLRS storage in existing facilities.

c. QUESTION: What will be the costs to build and maintain facilities in Europe to store MLRS basic load and war reserve requirements?

ANSWER. The cost to build facilities in Europe to store MLRS basic load and war reserve requirements is approximately $44.8 million; average annual magazine maintenance costs are about $18,515.

Basic load storage facilities are currently programed at $9.8 million for 29 Stradely Magazines (25' x 80' x 14'), during FY 82-84.

(C) War reserve storage requirements based on DELETED DELETED will require 132 Stradely Magazines at a total cost of approximately $35 million.

1. Availability of Storage Facilities for MLRS Ammunition (Cont'd)

d. QUESTION. When the MLRS terminally guided submunition warhead and binary chemical warhead are ready for fielding, total MLRS storage requirements could escalate. How will MLRS storage needs be met when the three warheads--conventional submunition, terminally guided submunitions, and binary chemical--are all fielded?

ANSWER. The storage needs of the three type warheads will be met by considerations of the quantitative requirements and technical characteristics of each warhead.

The quantitative storage requirements imposed by the development and fielding of the terminally guided and binary chemical warheads will be additive to the currently programmed conventional submunition storage requirements. This added storage requirement is significant especially when assessed in respect to currently unresolved problems of storage ceiling limit in Europe and lack of infrastructure funds.

Technical characteristics of the warheads require additional storage considerations especially as pertain to the binary chemical submunitions. The nature of the warhead and its reactant containers will require storage accommodations separated from conventional munitions, and in fact the two elements of the binary munition will require separation from each other also in the interest of security and safety. In addition, there will be a need for consideration of security measures usually associated with storage and shipment of chemical munitions. Separation of terminally guided submunitions from conventional will also be considered but this is not as critical as related to the chemical submunition.

The Terminally Guided and Binary Chemical programs are in early concept definition phase, therefore specifics of plans for storage have not been established at this time.

Multiple Launch Rocket System (MLRS)

2. Availability of Test Equipment for MLRS

a. QUESTION. How is the Army assured that enough EQUATE systems are available at both general and depot support levels to meet all user's needs?

ANSWER. The existing AN/MSM-105 and AN/USM-410 programs and fielding schedule support the MLRS general support and depot requirements at all necessary locations with the following exceptions:

- Fort Sill, Oklahoma will not receive either of the systems, but will receive its support from the AN/MSM-105 at Fort Riley, Kansas.

(C) - DELETED DELETED a contract for interim support from Vought Corporation is being prepared. The Army considers this support plan to be adequate.

b. QUESTION. MLRS EQUATE test program sets will be able to diagnose about 88 per cent of the known failure modes. The remaining failure modes will be handled through contractor support or use of throw-away spares. How will the use of contractor support affect MLRS readiness?

ANSWER. No impact on MLRS readiness is expected. The MLRS test program sets (TPS) are being prepared in two phases. Phase I is underway, with Phase II scheduled to begin in May 1982. The remaining TPSs, which represent the remaining 12 per cent of the total expected failures, are covered in Phase II. These Phase II TPSs will be available 31 Dec 1984. It is anticipated that no more than 4 printed circuit boards (PCB) will be contractor supported or throw-away.

3. Availability of Meteorological Data System (MDS)

a. QUESTION. Because of its age, the current system is hard to maintain. How is the Army assured that the current weather system can remain operational until the MDS is fielded?

ANSWER. Continuous maintenance and rebuild efforts are directed toward maintaining the current system (AN/GMD-1) until the MDS is fielded, but assurance that all sets will remain operational is not possible. Fourteen AN/GMD-1 systems have been funded for rebuild in FY 1982.

b. QUESTION. From where will the Army get parts to fix and maintain the current system?

ANSWER. Many of the parts needed to fix and maintain the current system are still available through normal requisition, but other parts are no longer stocked or have been declared obsolete; these must be purchased or fabricated locally.

c. QUESTION. Both the current weather system and the MDS use balloons to gather weather data. As a result of wind, balloon systems may measure weather data in a location far from the desired location. Does the Army have plans or proposals to develop a rocket-based weather measuring system based on the MLRS?

ANSWER. The Army has no immediate plans for fielding a rocket-based weather measuring system. The MDS (AN/TMQ-31) has the capability to receive data from weather measuring sensors dropped from aircraft, artillery projectiles or rockets, should such a capability be developed in the future. Upon full deployment, there will be three MDSs in a division zone versus the current two GMD-1s. The increased capabilities of the MDS will permit deployment further forward, nearer artillery firing units, and will permit more frequent measurements of atmospheric conditions. The result will be improved meteorological data and its availability for all artillery units.

Multiple Launch Rocket System (MLRS)

4. Conventional vs. Terminally Guided Submunitions

a. QUESTION. What impact will the addition of TGSM warheads have on current MLRS program plans for procurement of approximately 362,000 conventional submunition warheads?

(S) ANSWER. The question is not answerable at this time because the Terminal Guidance Warhead (TGW) concept has not been defined sufficientlv to allow a COEA to be conducted to explore the warhead mix question. DELETED

b. QUESTION. What would be the logistics impact of fielding MLRS with a TGSM?

ANSWER. Since the MLRS will have been fielded with the conventional submunition warhead before the TGW is fielded, the logistics impacts are expected to be minor. Every effort will be made to develop a TGW that maintains the wooden round characteristic of the basic MLRS that requires no ammunition maintenance. In terms of the supply and storage burden, the analysis has not been done yet that would yield those impacts. In any case, the burden should be reduced provided the wooden round is realized and there is a tradeoff of some conventional submunition warhead rounds for TGW rounds. There will be some additional bookkeeping involved in the issue and keeping track of TGW rounds, although this burden will be insignificant as contrasted to the projectile mix that exists for the 155mm and 8 inch howitzers.

c. QUESTION. To what extent has the Army considered dedicated launchers for both conventional and TGSM rockets? How would the requirement for a conventional submunition warhead mission impact a launcher's responsiveness for a TGSM warhead point target mission?

(S) ANSWER. The consideration of this question is just beginning at

4. Conventional vs. Terminally Guided Submunitions

(S) c. ANSWER (Cont'd)

Fort Sill, where they have been requested to evaluate alternatives to the MLRS baseline organizations for employing follow-on warheads. The impact on dual use of launchers is affected directly, as the fire mission cycle time increases. It will take about DELETED to change loads from one type to the other. Depending on the tactical situation, the launcher could be loaded with the rockets to attack the most probable target, i.e., "duty period" concept. If properly managed, the impact should be minimal. This matter is being addressed by the TGW Special Working Group, with answers available at this time next year.

Multiple Launch Rocket System (MLRS)

5. MLRS System Effectiveness Model

a. QUESTION. Why hasn't the system effectiveness goal been revised to reflect the larger submunition payload? By not revising the goal, hasn't the Army lowered the contractor's performance standard?

ANSWER. The Army does not believe that the goal and threshold values should be changed just because of improved rocket cost-effectiveness, nor that performance standards are lowered. The goal of DELETED DELETED which represents the point beyond which the system is not cost-effective; the Army believed then, and believes now, the goal and threshold should not change. The fact that tradeoffs within the control of the contractor enabled a design choice that produced a larger munition payload and greater cost-effectiveness than the conceptual system used in the COEA has no effect on the fact that the system is clearly cost-effective with DELETED DELETED per target array. Changing the goal for the contractor could create increased expenditues to achieve marginal improvement and is not deemed advisable. By not revising the goal the Army has been constant in its standard of cost-effectiveness acceptability of the MLRS and has maintained the tradeoff flexibility that is essential if we are to control schedule, cost, and Design to Unit Production Cost (DTUPC). The standard hasn't been lowered and development results have been exceptional. Increasing requirements to match our ultimate expectations rather than holding to requirements that represent a totally acceptable system would invariably lead to cost growth and schedule slippage. The MLRS success in development is largely attributable to maintaining constant requirements, goals, and objectives; now is no time to change.

b. QUESTION. Assuming current dud rates, accuracy, range, radius of effects, et cetera, would the present MLRS system meet a system effectiveness goal established using 644 submunitions per warhead?

ANSWER. No. A revised goal would be approximately DELETED DELETED Demonstrated values for dud rate, accuracy, radius of effect, et cetera, would result in approximately DELETED which would be above goal and below threshold. Such a goal revision would drive the development in ill-advised directions by loss of essential design tradeoff flexibility within the elements of dud rate, accuracy, et cetera. It should be noted that the standard of acceptability against which the system must be judged is the Required Operational Capability (ROC).

Multiple Launch Rocket System (MLRS)

6. Problems with the Carrier Vehicle Program

a. QUESTION. If there is a reduction in the vehicle program, what will be the impact on MLRS?

ANSWER. If there is a reduction in the IFV/CFV quantities, the impact on the MLRS carrier program would be an increase in the unit cost. The MLRS Carrier Vehicle program partially shares a joint production line with IFV/CFV vehicles. Primary items which are shared are various common detail parts, and hull welding/machining centers. The increase in unit cost would primarily result from two factors: (1) unit cost increase in the material common with the IFV/CFV program due to quantity discounts and (2) increase to the carrier program for larger phase of distribution of overhead due to the reduced IFV/CFV program.

b. QUESTION. How would such a reduction affect MLRS unit costs?

ANSWER. Assuming a 10 per cent manufacturing base reduction, it is estimated that the unit cost of the MLRS carrier would increase 20-30 per cent (management judgment). Unit costs of the IFV/CFV and MLRS are dependent on combined production. The prime contractor's overhead rate will vary year to year depending on the manufacturing base in phase. The Carrier Vehicle represents approximately 40 per cent of the current cost of a MLRS Self-Propelled Launcher Loader. Because of the potential impacts to the unit cost, MLRS program requirements should be considered if any potential reductions are planned for the IFV/CFV program. In this manner, impacts can be minimized by rephasing remaining MLRS production quantities by FY to reduce cost impacts.

c. QUESTION. What are the expected total start-up costs for qualifying a second prime contractor?

ANSWER. A preliminary estimate of about $72 million has been made, without benefit of any contractor proposals, for the competitive start-up of an IFV/CFV second source. Second sourcing the MLRS carrier is not planned. The IFV/CFV production split between the two contractors is estimated to be 60/40 per cent.

If the MLRS carrier were to be second sourced, the minimum lead time for establishing a line capable of producing qualified carriers is 30 months. A realistic estimate of lead time required may be 36 months. If a contract could be in place by Nov 82, and assuming a 30 month requirement, hand tooled carrier production deliveries would begin in May 1985. At this point in time, only 73 carrier vehicles remain to be produced (48 for the FY 86 buy and 25 for the FY 87 buy). Realistically, one would not anticipate a second prime contractor showing any interest in producing a portion of a total of 73 vehicles. However, several countries other than those participating in MLRS codevelopment and coproduction (United States, United Kingdom, Germany and France) have expressed interest in third party sales of MLRS. The resulting potential for increased production could be significant.

6. Problems with the Carrier Vehicle Program (Cont'd)

d. QUESTION. What other effects could result from qualifying a second prime contractor for the carrier program?

ANSWER. If the MLRS carrier were included in an IFV/CFV second sourcing, considerable duplication of cost requirements would result, such as for:

- Establishing a quality control program at new plant.

- Procuring at least one extra vehicle to be produced by new contractor for Initial Production Qualification testing purposes.

- Maintaining a System Technical Support contract with new producer.

- Providing at least one 6000 mile test.

- Providing automotive specification comparison tests (radiator, suspension, et cetera.).

Other questionable areas involve:

- Ability of second source to acquire automatic welding machines and fixtures for the carrier hull. This has been a major problem with the present (experienced) contractor.

- Transfer of equipment from the present prime to a second source. Time constraints would drive such transfer problems. By transfer of production equipment (government-owned) some savings will be expected.

- Production knowledge required. Since the present prime source has the engineering background for the concept, design, development, and production of the carrier vehicle, it will be extremely difficult to expect a second source to initially produce at the rate we require.

- Subcontractor (vendor) supply. The transmission is a vendor item and requires long lead time. If some uncertainty in demands per time period because of a second source exists, transmission deliveries and cost may be seriously impacted.

Multiple Launch Rocket System (MLRS)

7. Scatterable Mine Warhead for MLRS

QUESTION. What plans does the Army have to develop scatterable mine warheads for MLRS in U.S. forces?

ANSWER. There is no US plan to develop a scatterable mine warhead for the MLRS. Mine delivery missions forward of the forward line of our troops (FLOT) can be responded to by three systems that are either in development or are now being fielded. Artillery delivered mines (ADAM and RAAM) can be delivered to a range of 18 km with the M109 SP Howitzer and 24 km with the M198 towed Howitzer. ADAM and RAAM Howitzer munitions are being fielded now. VOLCANO is a helicopter-delivered system in development with a conceptual capability of delivering mines to 70 km forward of the FLOT. GATOR is a mine system designed to be employed by US Air Force tactical aircraft to a range of 150 km forward of the FLOT. The GATOR system is within 30 days of a decision to produce and should be fielded by FY 84.

The systems noted above are considered by the Army to have advantages in cost and effectiveness when compared to a MLRS mine warhead.

Under the terms of the MLRS MOU between the United States, France, Germany, and the United Kingdom, Germany is developing a scatterable mine warhead employing the AT 2 mine. The MLRS Project Manager and the MLRS prime contractor, Vought Corporation, have the responsibility for overall program management and system integration to insure compatibility of the total MLRS with the requirements of all MOU participants.

Multiple Launch Rocket System (MLRS)

8. Procurement Strategy for MLRS

a. QUESTION. Since the Army's procurment plans for the rocket recommends second source, what evidence is available showing that sole source would be more cost effective?

ANSWER. The Army's current procurement strategy for MLRS is designed to retain the option of going either sole source or competitive, depending on which the Army determines to be most cost effective after evaluating the results of a firm proposal for a fixed price multiyear contract from the prime contractor, Vought Corporation.

The Army currently has four data items which bear on this option:

(1) The Army estimates that about 170 million dollars can be saved by awarding a multiyear contract to Vought under Deputy Secretary of Defense Carlucci's initiative.

(2) Vought submitted a proposed unit cost for each year of the planned production as part of their competitive proposal in the competition with Boeing Company during the Validation Phase.

(3) A unit cost reduction of about 25 per cent was achieved by both Boeing and Vought during the Validation competition by taking nearly every possible measure to reduce unit cost.

(4) The Army second source study indicates that the break-even point for a second source is approximately 300,000 rockets based on achieving a further 15 per cent reduction in unit cost.

Because of the substantial reduction in unit costs already achieved in the Validation Phase competition, the Army believes that an additional 15 per cent reduction will be extremely difficult to achieve. Therefore, considering the potential multiyear savings projected by the Army and Vought, the Army feels that a multiyear contract may be the best solution. However, the Army believes this decision should be made based on a Firm Fixed Price proposal from Vought rather than on a study. The proposal will be made with the understanding that a second source will be developed if (1) Vought's unit prices are not consistent with their competitive validation proposals and (2) the savings they project for multiyear are not reflected.

Using this strategy, the Army believes that the risk of following either option will be greatly reduced.

b. QUESTION. Before deciding on a sole source or a second source, shouldn't the Army determine the quantity of rockets and the projected requirements for the terminally guided warhead?

ANSWER. The Army believes that the 363,000 rockets in the current program plans are the minimum number of conventional MLRS rockets that will be required. However, to protect against the possibility that an affordability mix with less than 363,000 would be achieved, the Army's multiyear

8. Procurement Strategy for MLRS

b. ANSWER (Cont'd)

contract provides for the last two years of planned procurement to be proposed as unilateral government options to he exercised in FY 88 and FY 89. These two options cover about 100,000 rockets. The multiyear contract would contain advance materials options for these two years to buy materials/components in FY 84 and 85. These buys will be structured to insure, to the maximum extent possible, that any such materials will be applicable to TGW rockets should a revised mix result from TGW Cost and Operational Effectiveness Analysis (COEA) planned for completion in FY 83/84.

c. QUESTION. Why was the Army directed to use a quantity of 190,000 in preparing alternative acquisition plans?

ANSWER. The 190,000 quantity of rockets was used as a floor in the second source study which was designed to identify the breakeven quantities of rockets which would be required to offset the cost of setting up a second source under several competitive strategies, i.e., TDP traditional, Leader Follower, and Freedom of Design. The study group realized that the breakeven quantity would result from the net cost to set up the second source and savings achievable by the competition. The cost of setting up the second source and the potential savings were both made as subjective estimates since no contractor proposals were available. Therefore, bands of cost were used. The 190,000 figure was chosen because a special excursion study conducted by the Army using some extremely constraining assumptions on MLRS firing doctrine had once produced a figure of DELETED
This figure was therefore used as the analytical floor for the study.

The constraining assumptions in that study are considered unrepresentative of Army doctrine for use of MLRS. For instance, MLRS was constrained to fire at counterfire targets only. This is contrary to the MLRS role during combat periods when cannon systems are overloaded or when interdiction targets are beyond cannon range. The diversion of cannon systems from direct support of maneuver forces to perform counterbattery and interdiction missions is one of the operational deficiencies of currently fielded forces, substantiating the need which is satisfied by the MLRS development.

d. QUESTION. What is the Secretary of Defense's position on competitive versus sole source acquisition strategy for the procurement of MLRS rockets?

ANSWER. The acquisition strategy recommended by Army and approved by USDR&E incorporates th advantages of both second sourcing and Advanced Multiyear contracting. Requiring the prime contractor to make his multiyear contract proposal with the knowledge that the Army has the capability to develop a second source accrues for the government the benefits of both competition and Advanced Multiyear contracting. If the prime contractor's firm price proposal is not advantageous to the government, the second source strategy will be followed. This acquisition strategy will permit the Army to make its multiyear or second source decision on the basis of firm price quotes by the contractor vice the paper studies currently available.

US ARMY'S REMOTELY PILOTED VEHICLES (RPV) PROGRAM (U)

1. (U) System Cost Growth, Schedule Slippage and Lack of Program Commitment by the Army.

   a. (U) QUESTION: Is the stretchout of RPV development to 86 months consistent with the critical need that has been identified for this program by OSD?

      (U) ANSWER: No. However, the current Research and Development (R&D) program is 70 months long not 86 months. The Army's priority for this program is high. The Army intends to successfully complete the program.

   b. (U) QUESTION: What will the Army use in the interim to perform RPV missions of target acquisition, artillery fire adjustment, target designation for precision guided munitions, target attack assessment, and reconnaissance?

      (U) ANSWER: There are a number of systems with limited potential to perform these missions i.e., forward observers, ground laser designators, combat patrols etc. However, these systems are not normally used at ranges greater than 3-5 kilometers from the Forward Line of Troops and have limited beyond line of sight capability. The Army will not have a capability to perform these missions on a day-to-day basis at ranges greater than 5 kilometers from the line of contact until RPV is fielded.

   c. (U) QUESTION: Where is the RPV on the Army's priority list of acquisitions?

      (U) ANSWER: It is now a high priority program in the upper 20% of the Army priority list.

   d. (U) QUESTION: What is the RPV's total program cost estimate, and what are the specific reasons for cost changes since program inception, especially changes due to schedule stretchout?

      (U) ANSWER: Acquisition Cost Estimates (Escalated $ in millions):

	DEVELOPMENT* (DAY TV)	CURRENT (DAY TV)	CURRENT** (NIGHT FLIR)	CURRENT TOTAL
R&D	123.4	377.8	96.7	474.5
PROC	439.8	992.1	138.5	1130.6
	563.2	1369.9	235.2	1605.1

CLASSIFIED BY: MULTIPLE SOURCES
REVIEW ON: 5 May 2001

*Initially capability is for day operations only using a TV camera in the mission payload.

**Follow-on product improvement to provide a night/adverse weather capability using a Forward Looking Infrared (FLIR) mission payload.

R&D COST VARIANCE (Escalated $ in millions)

DAY TV PROGRAM	
123.4	Development Estimate
41.0	Cost Growth
77.2	Program Stretchout (43 months to 70 months)
8.1	Scope Changes
10.7	Extra System for Early Fielding and Testing
11.3	MICNS Data Link
34.8	Increased Government Management and Management Support
18.4	Management Reserve and Total Risk Assessment Cost Estimate (TRACE)
39.8	Test Program Sets for Automated Test Equipment
6.8	Institutional Trainer
6.3	Miscellaneous
377.8	
NIGHT FLIR PROGRAM	
96.7	Product Capability Not Included in Original Development Estimate
474.5	Total Current Estimate

PROCUREMENT COST VARIANCE (Escalated $ in millions)

DAY TV PROGRAM	
$439.8	Development Estimate
261.6	Nonrecurring and recurring for an additional 215 air vehicles and 2 ground systems at the new unit cost.
132.4	Increase in DTUPC Estimate and Better Definition of Production Costs
135.1	Escalation and Program Stretchout
23.2	Test Program Sets and Interface Hardware in Quantities for Deployed Automated Test Equipment (AN/USM-105) and Electro-Optic Benches
$992.1	TOTAL CURRENT ESTIMATE DAY TV PROGRAM
NIGHT FLIR PROGRAM	
$138.5	Added FLIR Mission Payload to Provide a Night Capability as Approved by May 81 ASARC
1130.6	TOTAL CURRENT ESTIMATE

e. (U) QUESTION: What are the potential changes to the cost estimate based on realistic schedule and technical assessments?

(U) ANSWER: No major changes are expected on the cost estimates provided. The cost estimates provided for the restructured 70 month full scale development program are based on the most realistic schedule and technical assessments.

f. (U) QUESTION: Has the current cost estimate been validated by independent Army and DOD estimating groups? If not, when does the Army expect to prepare a validated cost estimate for this multibillion dollar program?

(U) ANSWER: The current cost estimate has not been validated. Validated costs will be available in September 1982. Prior to the May 1981 Special Army Systems Acquisition Review Council (Special ASARC) review of the program, the Army had prepared validated costs for the program. However since that time the program has been restructured and costs must be validated again.

g. (U) QUESTION: Explain specific reasons for cost growth in Lockheed's development contract?

(U) ANSWER: RPV Contract Cost Variance (Escalated $ in millions):

DAY TV PROGRAM	
101.1	Original Contract
41.0	Lockheed and Subcontractor Cost Growth
77.2	Program Stretchout (27 months)
2.5	Software Award Fee
8.1	Scope Changes to Include Interim Data Link
229.9	Current Estimate Day TV Program
NIGHT FLIR PROGRAM	
76.1	Proposed Scope Change to Add a Night Capability
306.0	Total Current Estimate

US ARMY'S REMOTELY PILOTED VEHICLES (RPV) PROGRAM (U)

2. (U) MICNS Subsystem.

a. (U) QUESTION: In light of the technical problems MICNS has experienced, is the program technically achievable?

(U) ANSWER: Yes. In May 1981 the Army had an independent team conduct a technical review of MICNS and determined that the program was technically achievable.

b. (U) QUESTION: Can a MICNS be delivered to meet the current RPV testing schedule?

(U) ANSWER: Yes. The current MICNS delivery schedule supports the 70 month RPV R&D program. However, the Army will not have a high degree of confidence in the schedule until Harris delivers the first module to RPV in October 1982.

c. (U) QUESTION: If MICNS is technically achievable and is expected on schedule, why should the alternate data link program be continued?

(U) ANSWER: The Army will review both the MICNS and the alternate data link schedule in April 1982 to determine which data link program should be continued. The Army initiated an alternate data link development to protect the RPV schedule in case the MICNS did not succeed. To insure a data link at IOC, the funds spent on alternate data link development are a prudent investment considering the greater cost of stopping or delaying the RPV program while waiting for a data link.

d. (U) QUESTION: In view of the cost and schedule problems with the MICNS and the resulting impact on RPV, does the Army believe that providing a high-risk, new technology item like MICNS as GFE to a major development program like RPV is a viable acquisition strategy?

(U) ANSWER: Yes. This program was directed by OSD to provide a common data link for a number of systems i.e., Standoff Target Acquisition System (SOTAS was terminated by Congress in FY82), USAF Precision Location Strike System (PLSS), and RPV. In order to accomplish the required commonality a separate program office was established. The MICNS program manager works closely with the RPV program manager to insure that the RPV schedule is supported. Battlefield Data Systems, the SOTAS replacement now plans to use the MICNS data link.

3. (U) Operational Limitations.

a. (U) QUESTION: Has the RPV threat assessment been updated to consider recent program stretchouts which will allow enemy forces additional time to develop RPV countermeasures?

(U) ANSWER: The RPV threat assessment is currently being updated to coincide with the latest estimates of fielding dates for the restructured RPV program.

b. (U) QUESTION: Has the Army determined to what extent weather and adverse battlefield conditions will degrade the RPV's effectiveness?

(U) ANSWER: Until the RPV is flight tested, system performance in adverse weather and obscurant conditions can only be estimated. Performance under conditions of degraded visibility will be determined during development testing. Studies have shown some degradation of the TV Sensor can be expected during adverse weather conditions. Follow-on development of product enhancements such as Forward Looking Infrared (FLIR) and millimeter wave mission payloads are designed to improve performance in low visibility. DELETED

c. (U) QUESTION: Will the Army be able to achieve the stringent system set-up and tear-down times required to keep the system survivable and operationally effective? When will set-up/tear-down be demonstrated?

(U) ANSWER: System set-up and tear-down times were postulated based on expected crew performance. Developmental tests during November 1984 will determine if the required disassembly/reassembly times can be met.

4. (U) Program Enhancements

a. (U) QUESTION: What are the technical assessments regarding the achievability of a FLIR and multi-control capability for the RPV?

(U) ANSWER: Current technical assessment is that the FLIR capability is achievable. This assessment is based on tests of a prototype. The program manager is working closely with the Army's Night Vision Laboratory to develop this capability. The multi-control capability is still in exploratory development and a technical assessment cannot be made at this time.

b. (U) QUESTION: Can the Army quantify, individually and collectively, the increased operational effectiveness to be gained by adding both a FLIR capability and a multi-control capability to the RPV?

(C) ANSWER: The 1978 RPV Cost effectiveness analysis attempts to quantify the increase in operational capability gained by adding Forward Looking Infrared (FLIR) to the RPV.

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These initial findings will be updated before the RPV production decision in further attempts to quantify the FLIR contribution to operational effectiveness. The contribution of multi-control capability has not been quantified, but analysis of this capability will be complete before starting Full Scale Development of the multi-control capability.

c. (U) QUESTION: What is the Army's rationale for delaying program enhancements like FLIR and multi-control?

(U) ANSWER: Both programs are progressing as fast as technology will permit. FLIR full scale development starts in FY 83 and multi-control about FY 86. Priority in the Army is to field the RPV with Day/TV capability first, followed by NIGHT/FLIR, and then multi-control.

d. (U) QUESTION: Since FLIR systems are already operational in other aircraft systems, why will it take so long to develop FLIR capability for the RPV?

(U) ANSWER: RPV FLIR development is not overly long. The FLIR is challenging in that it must be packaged in a small volume and be light weight consistent with the unmanned air vehicle requirements.

5. (U) Status of Testing and Evaluation

a. (U) QUESTION: What specific problems has the contractor encountered in integrating the RPV's subsystems into workable, flyable units? What is the long range impact on program development?

(U) ANSWER: Specific problems included delays in development of the mission payload subsystem and software development.

(1) (U) The prototype mission payload had failed the vibration portion of the acceptance tests, and trouble shooting and redesign were required to correct the problems. The prototype mission payload was retested January 1982 and successfully passed the acceptance tests, and has been shipped to the prime contractor.

(2) (U) Software development was behind schedule. However, with increased emphasis and management attention progress has been made in this areas as evidenced by four successful manned aircraft tests in which the software worked better than expected.

Impact of integrating these subsystems on the 70 month R&D program is minimal.

b. (U) QUESTION: What is the most current assessment for achieving first flight and what performance parameters does the Army hope to demonstrate with this test?

(U) ANSWER: Current assessment is the RPV first flight will be achieved in the summer of 1982. Army expects to demonstrate the following capabilities:

(1) (U) Launch and recovery

(2) (U) Flight along a preplanned route.

(3) (U) Telemetry of a clear TV picture to the ground control station.

6. (U) Plans for Operational Testing and Evaluation.

a. (U) Question: What are the specific risks in fielding a complex system like RPV, without performing totally independent operational tests?

(U) ANSWER: At this time, the Army plans to conduct a totally independent operational test. Specific risk in not conducting a totally independent operational test is that test results might be biased by keeping the same crews operating and maintaining the system for both tests. Additionally, the training package would not be tested before fielding. To further minimize program risks and define operational concepts for this new capability, the Army will field one engineering development model to the 9th Infantry Division in 1983.

b. (U) QUESTION: What is the opinion of the user representatives, such as TRADOC, on performing combined development and operational testing?

(U) ANSWER: TRADOC has nonconcurred with combining development and operational testing for RPV.

c. (U) QUESTION: What benefits result from combining development and operational testing?

(U) ANSWER: The primary benefit is the savings of dollars due to the shortening of research and development time and the earlier production start. Also, the system can be fielded earlier.

PERSHING II Missile

1. Defense Mapping Agency Support to PERSHING II

a. QUESTION. Why has the Department of Defense not assured that DMA's support for the Pershing II would be adequate to permit its effective operational use upon deployment? Please describe the circumstances which have led to the condition of a weapon system, developed over a period of several years, being restricted because of inadequate support.

ANSWER. The Army has assured the effective operational use of PERSHING II upon deployment by requiring that DMA produce "hand-crafted" reference scenes for use against the SACEUR high priority preplanned targets. At least Deleted of these scenes will be available when the first nine launchers are deployed in Dec 1983 to meet the IOC. As long as they are needed, DMA will provide annually, Deleted reference scenes of critical targets selected by SACEUR. These "hand-crafted" scenes will permit PERSHING II to be effectively targeted with full system accuracy against a wide variety and large number of high priority targets.

The PII Required Operational Capability (ROC) requires an in-theater capability for generating target reference scenes to attack perishable targets within the system response times of DELETED and within the system accuracy of a DELETED Circular Error Probable (CEP). This requirement is being met through the development of the Reference Scene Generation Facility (RSGF) which will be deployed in the PII battalions. The RSGF will utilize an Operational Data Base (ODB) provided by the Defense Mapping Agency (DMA) to generate the reference scenes.

Although DMA is required to provide a fully accurate ODB at IOC, DELETED

b. QUESTION. What is the Department of Defense doing to correct this situation?

ANSWER. In addition to providing the preplanned reference scenes, DMA has structured the upgrade of the ODB so that the high priority target areas are completed first (FY 1985). DMA has also identified new production equipment which, if purchased this year, would accelerate the upgrade of the ODB by one year. The Office of the Secretary of Defense is currently evaluating the feasibility of procuring this equipment.

2. Development of a Short-Range Pershing II

a. QUESTION. Why did the Army begin developing a short-range Pershing II for possible use by U.S. forces instead of planning to further improve the Pershing Ia for use if the long-range Pershing II is not deployed?

ANSWER. The original engineering development plan called for the maintenance of a PIa/PII hybrid option along with a single stage, reduced range PII variant. However, early in the engineering development program it became obvious that a PIa/PII hybrid was not a viable option and it was eliminated. There are several reasons why the option was dropped. The most important of these are:

- The PII reentry vehicle had increased in weight to the point that only 76 per cent of the required range could be achieved with the PIa motors.

- As compared to the single stage PII variant, the PIa/PII hybrid required a much more extensive research and development effort with respect to missile flight parameters such as control, stability, guidance, and trajectory. This effort would have increased R&D costs and introduced new technical risks.

- The supportability of PIa motors for an additional period of time beyond that presently planned would cause numerous logistics problems.

- It was not considered cost effective when compared to the single stage, PII variant.

b. QUESTION. Did the Army consider the relative cost-effectiveness of developing a short-range Pershing II and improving the Pershing Ia? If so, what were the results? If not, why?

ANSWER. The Army did consider the relative cost effectiveness of the two systems and found the single stage, PII variant to be more cost effective. It should be noted that aside from improved performance, a most compelling rationale for replacing PIa with PII is that PIa is an old system using old technology which is becoming increasingly more difficult and costly to maintain. The PERSHING Project Manager's Office conducted a 10-year life cycle cost comparison for the German Air Force of PIa and the single stage PII variant which, in operating and support costs alone, indicated an advantage of over $475 million (escalated dollars) for the PII variant. This estimate was for a force structure which is less than two-thirds the size of the US force structure. This analysis assumes that repair parts would be available. The prime contractor has informed the Army that, based on his buy-out of the last available repair parts, he cannot support PIa beyond 1987.

c. QUESTION. What is the Army's basis for developing a weapon system for possible foreign sales when no customer has committed to buy it? Is such development occurring on other major system programs? If so, identify them and describe the circumstances in each case.

ANSWER. Since the beginning of Engineering Development, the Office of the Secretary of Defense has required the development of a PERSHING missile which has the PIa range for two reasons: as a "fallback" system, should future arms control negotiations result in an agreement not to field the extended range PERSHING II; and, to have available a shorter range system that could be

acquired by the Germans if they decide to modernize their PERSHING system. Even if, from the beginning of development, the German Air Force had no possible requirement for a replacement system, the US requirement for a "fallback" system would still exist and the current development program would be the same.

The Army does not know of any other development programs with similar constraints.

3. Pershing II Support Vehicles

a. QUESTION. What is the Army's assessment of the training and logistics problems which will be created by deployment of two models rather than one?

ANSWER. It is the Army's assessment that no significant logistics problems will be encountered by deployment of two models of 10 ton truck (M.A.N. and HEMTT). The HEMTT truck will be deployed worldwide to support a variety of Army requirements such as MLRS, PATRIOT and DIVAD Gun, as well as regular unit ammunition and fuel transportation requirements. This worldwide deployment requires and results in a normal package of full logistics support in the Army. The M.A.N. truck, intended for European deployment in support of PII, will be supported logistically by Army organizational and direct support maintenance with higher levels of support maintenance provided by the contractor through his extensive network of facilities. This system is in place and in use by the German army and guaranteed support is assured by virtue of an MOA between FRG MOD and US DOD. Some increase is foreseen in training requirements, but this problem is not considered to be difficult to overcome and is well within the capability of the Army to accommodate.

b. QUESTION. What are the estimated life cycle costs of deploying two models? One model?

ANSWER. Comparative life cycle costs of deploying both the M.A.N. and HEMTT in support of PII are believed to be similar. However, an actual comparison of the cost of deploying one vehicle versus two has not been conducted since two different logistics support concepts are envisioned and actual field use data is not available. In any case, the similarity of the vehicles and the fact that they are both based on proven commercial componentry lends credence to the position that no significant difference in life cycle cost is envisioned.

4. Testing of Pershing II

a. QUESTION. Can the Army's test plans be changed to permit at least two or three missiles to be fired to demonstrate accuracy before the production decision? If not, why? If so, why hasn't the change been made?

ANSWER. On 21 Dec 1981 a special Army Systems Acquisition Review Council (ASARC) was convened to examine this question. A determination was made that it was not possible to delay the production decision until completion of an overland flight without putting the critical Dec 83 IOC at risk. Nor could the test program be accelerated or modified to provide for earlier overland

flights because of scheduling, hardware availability and IOC constraints. However, the ASARC did approve a change to the test program which integrates the user and developer testing and provides for an early operational assessment of PERSHING II in July 1982. The flight test program has also been modified to provide for earlier user involvement. The original flight test program consisted of a 14 missile contractor/developer Development Test II program followed by a 14 missile OTEA/User Operational Test II program. The new integrated flight test program gets the user involved in the first missile flights and phases him into control of the test missiles early in the test sequence. This approach has made 10 of the 14 Operational Test missiles unnecessary and they have been eliminated from the flight test program. The Army is now investigating the most cost effective way to make this reduction. The special ASARC also decided to propose a tailored decision process to the Office of the Secretary of Defense (OSD) which would require a production continuation decision review in Nov 1982, after the sixth missile flight (i.e., after four overland flights). If approved by OSD, this new decision process would recognize that, given the political constraints on the program, a production continuation decision later in the test program would be more logical than a production decision after the second missile flight.

5. Quantity of Missiles to be Procured

a. QUESTION. What has the Department of Defense done to resolve the issue over the number of missiles to be procured?

ANSWER. The Director of Test and Evaluation, Office of the Secretary of Defense, has reviewed the Defense Audit Service report and the Army's rebuttal to that report, and has determined that the current production quantities are justified. This determination is being further reviewed by the Defense Oversight and Review Committee. The results of that review are not yet available.

b. QUESTION. Has the planned procurement quantity of missiles been reduced consistent with the Defense Audit Service report? In not, why?

ANSWER. For the reasons stated above, the Army has not been directed to reduce the procurement quantities.

DIVAD

1. Defense Systems Acquisition Review Council May Be Waived

a. QUESTION. What is the current status of the Army's proposal that the DSARC for DIVAD be waived?

ANSWER. The Army has not formally submitted a request to cancel the DSARC. We plan to conduct a preliminary review in support of the ASARC III on 16 February 1982. We will closely examine the DIVAD Gun program performance in terms of test results, cost and schedule risk, and future plans. If the Army is satisfied that no issues exist which would prohibit pursuing the present program, we will recommend to the Under Secretary of Defense that the DSARC be cancelled.

b. QUESTION. What purpose would waiving the DSARC for DIVAD serve?

ANSWER. The waiving of the DSARC, if no significant issues exist, is in line with the initiatives instituted by the Deputy Secretary of Defense. This initiative places responsibility for production decision with the service secretaries unless special circumstances exist. The waiving of the DSARC will save time and manpower which could then be focused on managing the program.

c. QUESTION. If the DSARC is waived, what input will the Secretary of Defense's Office have in the multibillion dollar production decision for DIVAD?

ANSWER. The Secretary of Defense's Office has access to all the information if it deems it appropriate to examine any aspect of the program. The Secetary of Defense's Office will review our ASARC results prior to permitting the cancellation of the DSARC.

2. DIVAD Priority and Budget Fluctuations

a. QUESTION. Provide a synopsis of the fluctuation in funding for DIVAD for fiscal year 1982 and the reasons for the fluctuations.

ANSWER. Fluctuations in funding for the DIVAD Gun system in FY82 were not program related. A large reduction in overall Army funding resulted in the reduction or cancellation of many programs in the Carter Budget. The amended FY82 program restored DIVAD funds to the desired level and is sufficient to procure the planned 50 fire units.

b. QUESTION. Provide DIVAD's priority within the Army and Defense relative to other major weapons systems.

ANSWER. The DIVAD Gun is the number two priority air defense system behind PATRIOT. Ranking of DIVAD within the context of all other weapon

systems is not something that is available. Ranking of systems within mission area is the only valid measure of comparison.

c. QUESTION. What impact would a reduction in 1983 funding have on the program. For example, what would be required in terms of the Ford contract?

ANSWER. A reduction in FY83 funding would negate the already negotiated contract. This would put the government in a position of renegotiating the contract in a sole-source environment with large cost penalities and a program stretch-out a certain result.

3. Procurement Quantities Need Reevaluation

a. QUESTION. How many Vulcan guns and Chaparral missile systems will actually be phased out of the active divisions and what are the Army's plans for these systems?

ANSWER. The Army plans to equip 11 active divisions and 3 non-divisional units with DIVAD Guns. A total of 264 Vulcans will be removed from the active divisions. No Chaparral units will be removed from the force as a result of fielding DIVAD. An additional 48 Vulcans will be removed from the active force as a result of placing DIVAD in non-divisional units. The total of 312 VULCANs will be refurbished and issued to the National Guard.

b. QUESTION. It appears about 18 percent more DIVADs than actually required are being procured since the Army plans to place 36 guns in each of the 14 active divisions.

(1) Provide a detailed listing of the intended use of the 114 DIVADs not to be placed in the active divisions.

ANSWER: The following is a breakout of DIVAD Guns not being placed in Army units:

27 - Ft Bliss to support the Air Defense School
7 - Redstone Arsenal to support the Missile and Munitions School
2 - Aberdeen Proving Ground to support the Ordnance School
2 - Ford Aerospace plant for system verification
28 - Operational Readiness floats
42 - Depots (maintenance floats)
1 - Physical teardown and evaluation
3 - Initial Production test
2 - Confirmatory Production test

(2) On what basis was the maintenance float calculated?

ANSWER: The maintenance float requirement was based on a 10-year life expectancy between overhauls and estimated turn around time based on similar type systems.

(3) Has a cost effectiveness analysis been conducted to evaluate the need to place 36 DIVADs in each division since they are to be far superior than the systems being replaced?

ANSWER: The Army has conducted a number of force structure studies dating back to the 1960's. We have evaluated support levels varying from one battery (12 guns) up to as many as four batteries (48 guns). In part because of cost/affordability constraints, the optimum force structure has been determined to be an air defense battalion of 36 DIVAD Guns and 24 Chaparrals. The formal COEA which supports this decision was completed in 1978.

(4) Could the quantities be reduced to a number closer to what is actually needed in the active division?

ANSWER. We have determined the present force structure to be the best solution, therefore a reduction in the number of DIVAD Guns would have an adverse effect on the ability of the division to carry out its mission.

4. Cost Estimates May Be Optimistic

a. QUESTION. What impact has the acquisition strategy used to procure DIVAD had on the availability of program cost estimates?

ANSWER. A program Baseline Cost Estimate (BCE) was completed by the Army in 1977 and was accomplished independent of contractor estimates. Since that time, the contractor estimates have been used only to validate and/or define the BCE. The acquisition strategy has had no effect on the availability of cost estimates.

b. QUESTION. When and how does the Army intend to validate the estimated costs to procure and support DIVAD?

ANSWER. The Army, in preparation for the Milestone III review, has prepared a new Baseline Cost Estimate and an Independent Parametric Cost Estimate. Each is used to validate the other and will be available in March for the ASARC.

c. QUESTION. When does the Army expect to have the essential integrated logistics support data needed to make a valid estimate of the cost to support DIVAD once fielded?

ANSWER. We believe we already have valid estimates on the cost to support the system. We have been conservative in our support cost estimates to compensate for the shortage of test data to support the estimates.

d. QUESTION. Provide a listing of common support equipment needed for DIVAD not currently in the Chaparral/Vulcan battalion and its estimated cost.

ANSWER. The following is a listing of common support equipment needed for the DIVAD not currently in the Chaparral/Vulcan battalion and its estimated cost:

DESCRIPTION	NO. REQ.	COST/ITEM	TOTAL COST
Air Conditioner: Flr Mtg 208V AC 60HZ 18,000 BTU	11	$ 4,223.00	$ 48,453.00
Carrier Cargo: Tracked 6 Ton (M548)	18	$106,425.00	$1,915,650.00
Electronic Shop Shelter Mtd Avionics: AN/ASM-146 Less Pwr	11	$ 15,388.00	$ 169,268.00
Recovery Vehicle Full Tracked: Medium (M88A1)	3	$538,404.00	$1,615,212.00
Truck Cargo: Tactical 8x8 Heavy Expanded Mobility w/winch (M977)	6	$140,000.00	$ 840,000.00
Truck Wrecker: Tactical 8x8 Heavy Expanded Mobility w/winch (M984)	3	$155,000.00	$ 465,000.00
Truck Cargo: Drop Side 5 Ton 6x6 W/E (M813A1)	27	$ 46,691.00	$1,260,657.00
Truck Utility: Armament 1 1/4 Ton 4x4 W/E	95	$ 32,400.00	$3,078,000.00
Power Plant Elec DED TM: 10KW 60H AN/MJQ-18	12	$ 28,200.00	$ 338,400.00
Truck Cargo: Tactical 5/4 Ton, 4x4 W/E	36	$ 11,000.00	$ 396,000.00
Truck Utility: Tactical 3/4 Ton, 4x4 W/E	29	$ 8,000.00	$ 232,000.00
Truck Utility: Tactical 1 1/4 Ton, 4x4 W/E HMMWV	15	$ 25,300.00	$ 379,500.00

e. QUESTION. Is this equipment generally available in the Army's inventory or will its procurement be required?

ANSWER. Availability of common support equipment is a chronic problem Army-wide due to the large modernization effort we are presently conducting and the budget limitations on the common equipment lines. DIVAD Gun is one of many systems which require some new equipment as part of the modernization.

f. QUESTION. What is the reason that additional common support equipment is needed to support DIVAD?

ANSWER. The additional common support equipment is needed because the quantity of weapons systems in the battalion is being increased. Further, added quantities are required as a result of the integration of the Stinger teams with the DIVAD Gun batteries.

g. QUESTION. Provide a list of the peculiar support equipment needed to support DIVAD and its estimated cost.

ANSWER: The peculiar support equipment required to support the D Gun system at each maintenance level is delineated below. Unit cost is a provided.

ITEM	MAINTENANCE LEVEL	UNIT COST
Tool Kit, Gun	Crew	$ 5,017
Cleaning Rod Kit	Crew	$ 109
Cleaning Tool Kit	Crew	$ 708
Muzzle Cover	Crew	$ 30
Ammo Reloader	Crew	$ 330
Purging Unit	Org	$ 16,053
Barrel Changing Tool Kit	Org	$ 1,966
Lifting Aids Kit	Org	$100,224
Extendable Boom Hoist	Org	$ 23,157
Alignment Kit	Org	$ 22,903
Test Station, Electronic*	DS/GS	$236,085
Test Program Sets, LRU	DS/GS	$330,274
Lifting Aids Kit	DS/GS	$ 49,956
Support Dollies	DS/GS	$ 4,956
Test Program Set SRU	GS	$ 99,162
Test Heads Set	GS	$324,024
Support Dollies	GS	$ 44,385
Workstand	GS	$ 14,246
Hydraulic Test Set	GS	$204,682
Prime Power Unit Test Set	GS	$206,520
Lifting Aids Kit	GS	$ 7,702
Stab. Sight Unit Test Set	GS	$421,845
Gen. Purpose Optical Test Set	GS	$203,257
Feed System Test Station	GS	$274,757

* Contract cost (vans and AN/USM-410(V1) are GFE)

h. QUESTION. Provide the estimated funding needed each year to exercise the contract options and what provisions are in the contract to protect the Government in the event this funding is not provided.

ANSWER. The funding profile shown below for FY82-84 supports the current contract and in-house costs:

FY82	FY83	FY84
$445.0M	744.8	875.4

There are no contract provisions which protect the government if funds to support the contract are not provided. We would be forced to negotiate a new contract with a sole source contractor.

i. QUESTION. Considering the uncertainties surrounding the DIVAD program's cost, how valid are the estimates reflected in the Selected Acquisition Report?

ANSWER. The estimated costs shown in the DIVAD Gun SAR have been consistently valid and updated in a timely manner.

93-273 O - 82 - - 41

5. Delayed Economic Production Rate

a. QUESTION. What were the Army's reasons for designating a production rate of 12 per month for DIVAD?

ANSWER. The DIVAD production rate was predicated on the maximum amount of units which could be procured with the budget allocated to DIVAD and the ability of the training base to absorb the units.

b. QUESTION. What are the reasons why this rate will not be achieved until after 408 DIVADs have been produced and this rate will not be achieved through the life of the first production contract?

ANSWER. The slow ramp rate for the DIVAD Gun was predicated on the availability of funds for procurement, and given that funding boundary, the most logical ramp is the schedule we have layed out.

c. QUESTION. Provide the Army's planned production schedule.

ANSWER. The following is the DIVAD Gun production schedule:

	J	F	M	A	M	J	J	A	S	O	N	D
1983 (Qty)									2	2	3	3
1984 (Qty)	4	4	5	5	5	5	6	6	7	7	7	7
1985 (Qty)	8	8	8	8	8	8	10	10	10	10	11	11
1986 (Qty)	11	11	11	11	11	11	11	11	11	11	11	11
1987 (Qty)	11	11	11	11	11	11	11	11	12	12	12	12
1988 (Qty)	12	12	12	12	12	12	12	12	6			

d. QUESTION. What incremental cost is associated with producing DIVAD at rates less than the most economical rate?

ANSWER. The Army has not calculated the incremental cost associated with producing at rates less than the economical rate. A decrease in production rates would necessitate a renegotiation of the contract and cost increases could be expected.

e. QUESTION. What actions could the Army consider to produce more DIVADs at the most economical rate?

ANSWER. In order to produce DIVAD at the most economical rate at an earlier time would require additional funding. At the present time, it is unlikely that more funding could be made available for the DIVAD program.

6. Process and Data Used to Identify DIVAD's Problem Areas

a. QUESTION. Since the Board had no prior evaluations of DIVAD's performance to compare with the prototype's performance and since the durability/mobility testing was not conducted, how can the Army be assured that all the prototype deficiencies were found?

ANSWER. Test time was sufficient that we can be confident that all problem areas not related to wearout/durability were made visible. Shorter test time than usual was required because many "mature" components and subsystems were in use, and prior test data were applicable. Furthermore, the government monitored all contractor subsystem and system level testing. Examples of mature components include the tank chassis, the F16 derivative radar, the Bofors L70 gun and ammunition family, and many other components. The durability/mobility testing will extend the prototype vehicle well into the expected durability/wearout range, and will produce considerably more test mileage on the chassis than has ever been tested on the parent M48A5/M60 Chassis and suspension. Detailed durability data is not required for a production decision - it is needed only to refine our estimates of the depot rebuild cycle and spare parts resupply rates.

b. QUESTION. Provide examples of other deficiencies and shortcomings found.

ANSWER. The deficiencies and shortcomings found in the system are included in the above referenced 29 deficiencies and 12 shortcomings. They range from significant items such as reaction time capability to minor items such as crew seatbelt design. The contract we signed with Ford Aerospace includes correction of all deficiencies and shortcomings.

7. Duplication of Efforts in Evaluation Process

QUESTION. Were the evaluation agencies given access to the Board's evaluation of the Ford prototype, to take advantage of the Board's efforts when preparing their evaluations for the production decision?

ANSWER. The Source Selection Evaluation Board for the DIVAD Gun program functioned exactly like those on any competitive program. The government evaluation agencies all received the raw data from the testing and participated in all other aspects of contractor monitorship throughout the development phase.

8. Evaluations of DIVAD Deferred or Constrained

a. QUESTION. We understand the Army's independent evaluators will not provide an independent assessment of DIVAD until after the "check test" which is scheduled for completion about 1 month prior to the production decision.

(1) Why were the Army independent evaluators requested to perform their normal function so late in the acquisition process?

ANSWER. The accelerated DIVAD Gun acquisition strategy required that all phases of the normal acquisition process be compressed. This included the amount of time available for testing. However, the independent evaluation agencies have participated in the DIVAD Gun Program throughout the Development Phase. The DT/OT and the Check Test were designed by the Army Materiel Systems Analysis Activity (AMSAA), and the Office of Missile Elec-

tronic Warfare (OMEW - for electronic warfare testing), and the Operation Test and Evaluation Agency (OTEA). Human factors inputs to test design were obtained from the Human Engineering Laboratory and experts from the user community. All of these agencies have evaluated DT/OT and Check Test data. The independent agencies will report formally during the ASARC process, as is always the case.

(2) How can the Army feel comfortable with a lack of independent evaluations on DIVAD when Army organizations with this type of expertise were established to perform this function?

ANSWER. The Army feels the independent evaluations are adequate to support making the production decision.

(3) Briefly describe the participation of the Army Materiel Systems Analysis Activity, Operational Test and Evaluation Agency, Human Engineering Laboratory and Logistics Evaluation Agency prior to the "check test."

ANSWER. As stated above, AMSAA, OTEA, HEL, and LEA performed their normal functions in support of this production decision.

(4) Synopsize the above Agencies' assessment and that of the Office of Missile Electronic Warfare following completion of the "check test."

ANSWER. Independent agency evaluations will be presented to senior DOD decision makers in advance of the ASARC, which is now scheduled for 9 Mar 82. Although these evaluations are not now complete, all indications are that they will be favorable.

(5) If the acquisition strategy used for DIVAD were to be applied to other programs, would the role of the independent evaluators be revised and if so, in what way?

ANSWER. We feel the role of the evaluation agencies has been supportive of this acquisition strategy. It has been a successful program and we see no reason to revise their role.

b. QUESTION. We understand the testing agencies prioritized their tests for the "check test."

(1) Why was test prioritization necessary? Does this prioritization indicate that some tests the agencies would like to conduct may not be that important?

ANSWER. The test agencies were asked to prioritize their test objectives but this is a normal process. Test time is normally limited either for cost or schedule reasons and prioritization of requirements is prudent management. All key objectives were included in the test.

(2) What is the basis for the follow-on maturation testing being limited to only 3 months of which a portion is required to set-up test instrumentation?

ANSWER: The duration of the check test was deemed adequate to accomplish the test objectives. The test objectives were completed within the 3 month time.

9. Use of Existing and Mature Subsystems

a. QUESTION. Provide a definition of existing and mature subsystems and list subsystems of this type used on the Ford prototype. To what extent has the F-16 radar/fire control system been modified?

ANSWER. The Army has never claimed that no modifications would be required to the mature components and subsystems being utilized. The term maturity is subject to definition; the Army's position is that components and subsystems utilized in the DIVAD Gun System are much more mature, and there are far more of them, than in a typical development. It was never planned to use the existing M48 Tank turret structure. It was our judgment as the original acquisition strategy was planned, and it remains true today, that large savings in development cost and time result from the use of these mature components. We believe that the use of an existing tank chassis, the L70 European gun and ammunition family, and the F-16 derivative radar, have each produced development savings of tens of millions of dollars. Development time savings of the same degree also accrue directly to the mature components.

Existing and mature subsystems:

(1) M48A5 Tank Chassis. Modifications to provide separate air defense turbine power source, and other minor modifications.

(2) L70 Bofors Guns and Ammunition. (See 9c and 9d, below)

(3) F16 Derivative Radar. New antennas for DIVAD Gun application, packaging, software and other changes. F-16 commonality is about 15 percent at the major box level, 30 percent at the next lower (e.g., circuit card assembly) assembly, and 80 percent at the component/piece part level. Also, a considerable number of production processes, assembly methods, etc., are to be co-used. This radar may also be modified for still further use on other programs.

(4) Plasma (radar) Display. Software modifications only.

(5) Attitude Reference Unit. 70 common with the system originally designed for the Advance Attack Helicopter equipment.

(6) AN/VRC-47 Radios, VIC-1 Intercommunications Set. Standard US Army issue.

(7) Chemical, Biological, and Radiological Equipment. Ventilated facemasks, heater element, filter elements, chemical agent alarm, and decontamination equipment are standard issue.

(8) Identification Friend or Foe Electronics. Hardware is 25 percent common with the US Roland equipment designed by Hazeltine, Inc.

(9) Laser Components. 80 - 90 percent of hardware derived directly from the Ground Laser Locator Designator or F5 aircraft programs.

(10) Fire Control Computer. Hardware is 30 - 40 percent common with the F15 radar computer.

b. QUESTION. Why is the Army Americanizing only the Bofors gun spare parts? Will extra guns by procured as spares?

ANSWER. For the L70 Bofors gun, only those parts which are consumed in normal use are to be manufactured in the US under current planning. Some parts of the gun, notably the large receiver forging, are never expected to be consumed during use, and will therefore not be placed in supply channels. The Army is currently evaluating the need for small quantities of insurance spares of these items. Although such purchases are not now programed, only relatively small amounts of money are involved. Note that technical data for all gun parts will be Americanized, but tooling will be procured only for spare parts. This will permit domestic manufacture of total guns in an emergency situation.

c. QUESTION. What design changes will be made to the foreign ammunition to increase its performance; why is a modified propellant required? Will this modified propellant require new production facilities?

ANSWER. During Americanization (Technology Transfer, Fabrication, and Test - TTF&T) of the Bofors L70 ammunition family, a domestic propellant charge is required. DOD policy requires total on-shore ammunition production capability. Current plans call for the use of a standard type propellant charge which will launch the projectile at 1100 meters per second, an increase of about 7. percent compared to European rounds. The muzzle velocity increase is not mandatory, but is being made to enhance system performance, especially against the long range stand-off helicopter. The Army currently believes that this change will not compromise two-way ammunition interoperability, and that the change is clearly cost/effective. The two-year TTF&T program is designed to verify performance of the Americanized ammunition, and to assure that NATO interoperability is not compromised.

The CONUS propellant charge will not require special production facilities. Test quantities have already been obtained from Hercules, Olin, and Valleyfield (Canada).

d. QUESTION. What percentage of the DIVAD prototype required development efforts?

ANSWER. The majority of hardware at the subsystem level was not of original design. The optical sights, linear linkless feed system for the twin guns; interface/controls for the crew, power distribution and management, turret drive motors, turret structure, and executive computer (practically all existing integrated circuits) are DIVAD unique designs. The bulk of development effort went

to system integration and testing, and to the writing and de-bug of the substantial amount of DIVAD-unique computer software. It is especially significant that no extensive design and testing were required for the automotive components, the high-frequency portions of the radar, and the gun/ammunition designs.

e. QUESTION. What percentage of DIVAD's development costs relate to modifying the M48 chassis, modifying the F-16 radar/fire control system, fabricating a new turret and Americanizing the foreign guns and ammunition?

ANSWER. Percentages of funds expended on various portions of the system are not possible to compute during the competitive phase of the program in that the government "hands-off" strategy allowed the two contractors to make independent decisions on their own cost breakouts. During the Phase II segment of the program following source selection, the following percentages of RDTE funds are applicable:

46% of funds for Technology Transfer
25% of funds for F-16 radar mods
5% of funds for turret development
4% of funds for M48A5 mods

10. Accelerated Test Program Did Not Test System Supportability

a. QUESTION. What is the current assessment of DIVAD's supportability and how was it determined?

ANSWER. The DIVAD Gun is expected to be fully supportable when fielded based on the contractor's plan and his responsibility for total system performance to include concurrent development of the system support requirements. We are fully aware of the risks involved and are concentrating our efforts to insure this aspect of the program receives management's best efforts.

b. QUESTION. How much additional time would have been needed to implement supportability tests which may affect your current assessment of DIVAD's supportability?

ANSWER. The contractor has scheduled approximately 30 months for support development. We feel that a one-for-one month slip might not be totally accurate but it is clear that best portion of that additional time would be required to follow a conventional strategy.

c. QUESTION. Considering the impact inadequate logistics planning and testing is having on currently fielded systems, explain how the Army decided deferral of logistics efforts was an effective way to save time and money?

ANSWER. Development of system support is a lengthy and expensive process based on current formal LSA processes and requirements. Deferral until this phase permitted the Army to fund only a single contractor for the effort while allowing sufficient time for adequate testing and evaluation of the sys-

ten support. We feel this saving of time and money are worth the inherent risk.

d. QUESTION. What was the savings in time and money realized as a result of deferring the logistics efforts?

ANSWER. Integration of mature subsystems and deferral of logistics efforts in Phase I indicates that fielding will be achieved in 7 years instead of the normal 12 years for conventional programs. Savings are impossible to quantify. However, we feel that several hundred million dollars in RDTE and procurement have been saved by the program's accerated schedule and use of mature components.

11. DIVAD's Mobility to Protect the M1 Tank Questionable

a. QUESTION. When does the Army plan to test DIVAD's mobility over typical battlefield terrain with the M1 tank? Since the M1 is significantly more mobile in terms of acceleration, slope speed and cross-country and maximum speeds, what potential constraints will be placed on its operation if depending on the DIVAD for protection?

ANSWER. The Army has never argued that the M1's maximum speed "would rarely be used." The DIVAD Gun tactical and doctrinal planning involves keeping adequate overwatch protection to continuously cover all other combat vehicles. Only on very rare occasions would the M1 conduct dash/maximum speed operations of sufficient extent that would cause it to depart from the overwatch protection of DIVAD Gun. Typical field exercises will involve leapfrogging and short runs of high speed and agility intermined with periods of slower movement or stopping.

No current planning will place M1's and DIVAD Guns together in an operational range test. The M1 and M60 vehicle, which has almost identical mobility characteristics to the DIVAD Gun, have been tested together and this provides adequate data to support deployment planning. Note that the M48A5 tank and the M60 tank have the same power train, and nearly identical suspension components. DIVAD Gun systems will operate with M1's immediately after the first DIVAD Gun units are formed.

b. QUESTION. What studies were conducted to compare the M1, infantry fighting vehicles and DIVAD combined operation under typical battlefield terrain?

ANSWER. Various studies, to include the COEA, and field exercises by the user support the planning for tactical employment of the DIVAD Gun. All this work support the DIVAD's ability to manuever with the M1.

c. QUESTION. Why did the Army allow the apparent significant mobility incongruity between the M1 and DIVAD to occur?

ANSWER. The Army does not feel there is a significant incongruity between the M1 and the DIVAD Gun. The M1 chassis is clearly superior but DIVAD will be able to provide air defense coverage for the forward maneuver units.

d. QUESTION. Provide a comparison between the self-propelled Vulcan gun and the DIVAD relative to mobility characteristics such as cross-country, slope and maximum speeds and acceleration.

ANSWER. The following comparison exists between the M48A5 and the self-propelled Vulcan. A key parameter not listed is the crew protection provided by the M48A5 which is not available in the Vulcan system.

	M48A5	SP Vulcan
Cross Country	15 mph	15 mph
Slope	60%	60%
Maximum Speed	30 mph	42 mph

e. QUESTION. When will detailed doctrine and tactics be available for DIVAD's operation?

ANSWER. (Doctrine letter will be out prior to the first units fielding at IOC.) Preliminary tactical and doctrinal planning has already been done by the US Army Air Defense School. This planning will continue to evolve until the first units are formed at Ft Bliss during late 1984.

f. QUESTION. What studies or tests were conducted to insure the modified M48A5 chassis is fully capable of carrying the 60 ton DIVAD?

ANSWER. The modified M48A5 chassis has been used on the two R&D prototype vehicles, which have logged more than 1500 miles. At this writing, a weighted turret test vehicle which is 2 tons over production vehicle weight has logged over 3000 miles in test. This test is designed primarily to verify the earlier conclusions that no particular chassis problems result from the DIVAD Gun system weight. No evidence of new problems has been seen.

Further assurance that the DIVAD Gun system weight will not prove troublesome comes from experience on the largely common M60 tank, which weighs 57 tons combat loaded. Furthermore, and even more reassuring, is that the M48A5 chassis is used to carry the Armored Vehicle Launched Bridge (AVLB), at a gross weight of up to 132K pounds. The AVLB carrier has showed no evidence of chassis problems.

12. Availability of Durability/Mobility Testing Data

a. QUESTION. Since the durability/mobility testing will be complete only 3 months after the production decision, has the Army considered deferring the production decision in order to take advantage of the additional data generated?

ANSWER. The Army feels the combined DT/OT data and the data generated during the check test provide sufficient information and a high enough degree of confidence to allow the production decision. To wait until the durability/mobility test is complete would also cause a contract breach and require negotiation of a new contract with a sole source supplier.

b. QUESTION. Has the Army established a mechanism to utilize data generated during the durability/mobility test for the production decision?

ANSWER. The Army will use test data from the durability/mobility test to the extent possible.

13. Heavy Reliance on a Maintenance Concept Not Yet Approved or Evaluated

a. QUESTION. How does the maintenance concept for DIVAD differ from other ground weapons systems such as for the M1 tank?

ANSWER. There is no difference per se. Conventional 4 level maintenance is planned. The difference is in details applicable to this program.

b. QUESTION. What are the advantages of implementing a maintenance concept for DIVAD which requires the Field Maintenance Test Set to be placed in the direct support area?

ANSWER. Cost savings due to reduced stockage requirements, increased operational readiness of the units, and implementation of Army "fix forward" policy.

c. QUESTION. What analysis of the direct support area have been conducted to ensure it is suitable for the DIVAD test vans?

ANSWER. TRADOC has stated that compliance with the mobility requirements of the FMTS specification under the contract is satisfactory for Direct Support area application.

d. QUESTION. What is the cost and configuration for each test set and how many does the Army intend to procure to support DIVAD?

ANSWER. Total cost of the van mounted version for deployment with TOE units at DS and GS is approximately $1.9M each with a planned quantity of 20. Dismounted versions for training, depot support, factory test equipment, and post deployment software support will cost less. Planned quantity is 20.

e. QUESTION. Describe your contingency plans for a maintenance concept in the event the ASARC/DSARC disapproves your proposed maintenance concept.

ANSWER. Disapproval is not anticipated. However, significant changes in the program will result with total negation of the acquisition strategy being tested. This would involve significant delays in schedule while new plans are developed. We believe our maintenance concept is sound and totally executable.

14. DIVAD's Ammunition

Prior to answering the specific questions, the following background information is submitted.

The US Army requirement for an air defense gun system was written and approved in CY75, before the technical feasibility of a cannon caliber proximity-fused projectile had been shown in this country. For this reason, the requirement document, and the cost and operational effectiveness analysis (COEA), which demonstrated the role of the air defense gun in the Force Structure, both recognized only point-detonating rounds. It remains true today that any air defense gun which performs as well as the conceptual COEA gun is a cost/effective procurement, even if only point-detonating projectiles are to be fired.

The projected costs for the proximity and point-detonating rounds are $183 and $94, respectively ($FY81), at the estimated quantities.

a. QUESTION. Is the high-explosive, point-detonating round for DIVAD effective both in the air and ground role and has the Army determined whether this round will meet the user's performance requirements?

ANSWER. Testing to date shows that delivery accuracy of the DIVAD Gun is essentially equivalent to the COEA generic gun. It follows from the COEA conclusions that the gun is a cost/effective item in the air defense weapon mix, and that it should be procured even if only point-detonating projectiles could be made available. The 40mm point-detonating round is expected to be effective in the ground role as well, i.e., no special purpose armor-piercing ammunition is required.

b. QUESTION. What analysis has been conducted to determine whether the proximity-fuzed round's increased performance over the point-detonating round is commensurate with its increased cost?

ANSWER. Numerous range tests, laboratory tests of fuze functioning and fragment yield characteristics, and computer studies have been made to determine the relative effectiveness of proximity-fuzed ammunition. The round is generally found to be several times more effective across the expected spectrum of targets than the point-detonating round. Since the cost ratio is only about 2:1, cost effectiveness is clearly indicated. Furthermore, several other advantages accrue to using the proximity projectile:

(1) Time to reach specific levels of effectiveness are reduced severalfold. In helicopter engagements, this makes a very significant difference.

(2) The ammunition resupply burden is greatly reduced, for a particular level of effectiveness.

(3) Many more "stowed kills" are represented on the ready ammunition load in the DIVAD Gun fire unit.

(4) Virtually all proximity fuzed rounds which function near a target will induce fragment damage, in many cases causing a mission abort and in practically all cases causing maintenance downtime for the aircraft.

The current program plan - to procure a mix of point-detonating and proximity-fuze projectiles - represents a more effective solution to the air defense gun-

nery problem, as well as a cost reduction resulting from a vastly reduced requirement for point-detonating ammunition purchases. Ammunition procurement planning has been reduced by several million rounds compared to earlier developmental estimates, largely because of the expected effectiveness of the proximity-fused projectile.

c. QUESTION. Has the Army fully evaluated the reduction in logistics requirements if DIVAD is fielded with only the point-detonating or proximity-fused round?

ANSWER. No, the above discussion provides rationale for use of both rounds.

d. QUESTION. To what extent does the Army anticipate the proximity round will be negated or degraded in countermeasure environment? To what extent has the proximity round been tested in an electronic countermeasure environment and what testing is still planned?

ANSWER. Extensive countermeasure studies and tests have been conducted by fuze experts at the US Army Harry Diamond Laboratories. Range tests in an electronic warfare environment have been performed by the Office of Missile Electronic Warfare. The Army does not believe that a problem exists in this area.

15. Task Force Visit to Verify NATO Interoperability

a. QUESTION. Describe the technical variations of the L70 40mm ammunition among the European countries and explain how they will impact on DIVAD's Americanization efforts.

ANSWER. The team visiting Europe did not attempt to inquire about inventories of guns or ammunition. Areas of inquiry were types of guns and fire control, ammunition ballistic parameters, methods of handling metro conditions, types of scenarios/threats, firing ranges, type of deployment, ammunition handling and storing procedures, and any experience on gun/ammunition safety.

European countries own primarily high explosive point-detonating projectiles. Some proximity ammunition has been inventoried. Americanization activities for DIVAD Gun CONUS ammunition will concentrate on the retention of total two-way interoperability with all European ammunition and guns.

b. QUESTION. What were the results of the task force's verification of NATO present and projected inventories of L70 40mm ammunition and how does it compare with the data originally used in determining NATO interoperability?

ANSWER. The team obtained no inventory estimates.

c. QUESTION. Did the task force determine why the L70 40mm ammunition inventories for the NATO Naval forces cannot be used to supply the NATO land forces?

ANSWER. Only unofficial comments were obtained, along with details of Naval L70 systems in use by NATO. It is the position of the US Army that NATO Interoperability of ammunition does extend to Naval systems. Although the most immediate sharing of ammunition might come within armies at forward ammunition supply points, the bulk of war reserve inventories will be far rearward, and will be just as accessible to Naval as to Army users.

16. Possible Alternative to DIVAD

a. QUESTION. Provide a cost comparison between the DIVAD and Infantry Fighting Vehicle.

ANSWER. There is no valid measure of cost comparison between the DIVAD Gun and the Infantry Fighting Vehicle since they have totally different roles and missions. A strictly nunical comparison shows that DIVAD rollaway unit costs in FY82 dollars are approximately $3.0 million while the IFV FY82 rollaway cost is approximately $1.0 million. We feel this comparison serves no practical value.

b. QUESTION. We understand the Institute for Defense Analysis briefly reviewed the Fighting Vehicle's capabilities to determine its capability and required improvements for use against air targets: (1) What specifically were the study's objectives? and (2) Outline the study's results.

ANSWER. The IDA study examined the Fighting Vehicles capability in the self defense role against air attack. The study concluded that the Fighting Vehicle has a limited ability to engage air defense targets but would not have near the effectiveness of the DIVAD Gun and that against the more sophisticated targets it would have practically no capability.

c. QUESTION. What would be required to provide the Infantry Fighting Vehicle with an adverse weather capability and what is the estimated cost?

ANSWER. A significant series of changes would be required if the Fighting Vehicle were to be provided with an adverse weather capability and then assume an air defense mission. No cost estimates have been accomplished to examine these modifications but costs would surely be significant. The Army feels the addition of that mission to the already heavily tasked IFV crew is totally unwise. Costs for a FLIR or radar mod that include the ability to search and track are prohibitive.

d. QUESTION. What capabilities will the DIVAD provide over the Infantry Fighting Vehicle in addition to its all weather capability which is to be achieved using a derivative of the F-16 radar and fire control system?

ANSWER. The DIVAD Gun has, in addition to its radar system, a laser/optical back-up acquisition capability, a sophisticated fire control computer, and 40mm armament. These capabilities are what allow DIVAD to engage the threat in a timely manner. The IFV can not accomplish that mission and was not designed for that purpose.

Army Comments on GAO Report - Large Scale Production of the M1 Tank Should be Delayed Until Its Power Train is Made More Durable, dated 15 December 1981

o The overall thrust of the final GAO report is the same as the draft. The final report does include a very brief summary of the Army's comments on the draft. However, each comment is followed by a GAO "comeback" that waters down the Army position. The final report conclusions remain essentially the same as those in the draft. The recommendations have been somewhat softened.

o The subject report attempts to present a case that the Army should not be allowed to begin full production of the M1 tank because the power train durability of the M1 tank has not met Army requirements. The subject report also recommends that full scale production should be deferred until the alternative diesel engine (the Teledyne Continental Motors AVCR 1360 diesel) has been compared in performance and durability with the gas turbine engine at which time the better engine should be selected for the full-production tank.

o The Army's position on these two issues was made very clear to the GAO investigators during meetings and in its formal comments on the draft report. Regarding the power train durability question, the Blue Ribbon Panel findings were offered as a rejoinder. The final report tends to down play the significance of these findings and refuses to accept the proposition that fixes to the production process and production tanks will result in performance which achieves or exceeds the Army's requirement. Similarly, the GAO investigators down play the Army's analysis of the suitability of pursuing the alternative diesel engine program while emphasizing Teledyne Continental's claims.

o The report recommends that the Secretary of Defense should:

(1) Direct the Army, if the durability requirement has still not been met after the 1982 production testing, to compare the performance and durability of the turbine and diesel engines as demonstrated in testing and to prepare an analysis of the two engines that addresses their cost and performance.

(2) Evaluate the Army's analysis and select one of the two engines for incorporation into the balance of the production run.

(3) Provide the key Congressional committees with an estimate of funds that may still be needed for improvements to elicit, from whichever engine is selected, the type of performance that would enable the power train to meet the durability requirements.

o The report recommends that Congress consider conditioning appropriations for large production quantities of the M1 on the power train meeting the Army's durability requirement.

o Inclosed are detailed summaries of the Army response to GAO recommendations and allegations.

RECOMMENDATIONS

The Secretary of Defense should:

RECOMMENDATION 1:
(Chap 5, p.16)

--Evaluate the results of the turbine engine's testing in production model tanks, scheduled for 1982, to determine whether the engine has improved sufficiently to raise the power train's durability to a level that meets or exceeds the Army's requirements.

RESPONSE:

The Army plans to reassess the power train durability of the M1 tank during testing scheduled to begin in March 1982 and to be completed in March 1983. As with the results of all principal test results of major systems, the results of this testing and evaluation will be provided to OSD. In the meantime, engineering analyses indicate, and experts in this field believe, that currently identified power train improvements which are being incorporated into production tanks will permit achievement of the currently stated durability goal of demonstrating a .5 probability of operating 4000 miles without a failure.

RECOMMENDATION 2:
(Chap 5, p.16)

--Direct the Army, if the durability requirement has not been met, to compare the performance and durability of the turbine and diesel engines as demonstrated in testing and to prepare an analysis of the two engines that addresses factors such as

--the comparative test results,

--the engines' respective estimated life-cycle costs,

--the funding that may still be required to bring either engine up to a level that would enable the power train to meet the Army's durability requirement,

--the time needed to ready the diesel engine for production, and

--the cost to modify the M1 tank to accommodate the diesel engine.

--Evaluate the Army's analysis and select one of the two engines for incorporation into the balance of the production run.

RESPONSE:

The Army agrees that if the durability requirement is not demonstrated during the 1982/83 testing it is appropriate to consider the above.

RECOMMENDATION 3:
(Chap 5, p.17)

--Provide the key congressional committees with an assessment of the power train's capability and with an estimate of funds that may still be needed for improvements to elicit, from whichever engine is selected, the type of performance that would enable the power train to meet the durability requirement.

RESPONSE:

Results of the durability assessment of the M1 power train will be made available to OSD for submission to Congress if desired. No additional funding requirements are anticipated should the Army remain with the current power train. Sufficient data are not available to predict the adequacy of programmed dollars to accomodate a switch to the alternate diesel engine and associated power train components.

MATTERS FOR CONSIDERATION BY THE CONGRESS

RECOMMENDATION 4:
(Chap 5, p.17)

Although the M1 is to start large-scale production, its power train's acceptability has not been demonstrated. Therefore, the Congress should consider conditioning future appropriations for large production of the M1 on the power train meeting the Army's durability requirement.

RESPONSE:

Power-train durability of .37 probability of operating 4000 miles without failure was demonstrated in testing (.37/4000). The power train has not met the very stringent Army requirement of .5 probability of no failure in 4000 miles (.5/4000), but it has met expected combat and system requirements. The basic purpose of the tank is to provide a survivable direct fire weapon on the ground battlefield. The M1 meets these and most other requirements placed on it. As indicated in the subject GAO report, the power-train durability was evaluated by a panel of experts from government and industry. This panel of experts reported that with the power train modifications planned for production tanks (beginning in March 1982), the Army's required power train durability for the M1 should be met or exceeded. It should be noted, however, that if the current durability shortfalls were allowed to remain, the impact on the tank's combat mission would not be significant. Never-the-less, the Army will continue to work to achieve the desired durability goal of .5/4000 miles in an effort to reduce system support costs.

ALLEGATION 1: (Digest p.i) The power train durability problems and production difficulties have slowed M1 deliveries up to now.

REJOINDER: The durability of the tank's power train has not slowed M1 deliveries. Quality assurance and the growing pains being experienced in early production are involved in the speed of delivery but not durability itself. Incidentally, it should be pointed out that over the past three months tank deliveries have exceeded our goals. In December, the first month the production rate was to have reached 28/month under the Army's revised schedule, 38 M1 tanks were produced.

ALLEGATION 2: (Digest p.i) Until October 1981 when it delivered 32 tanks, production by the prime contractor, Chrysler Corporation, had been well below the 30-a-month required by the current limited production contract.

REJOINDER: Like many new systems just entering production, the M1 has experienced some initial production problems. The Army has worked with the contractors to solve these problems. The last three months' production experience indicates those problems are being solved: October and November production deliveries exceeded the planned rate and December's production totaled 38 tanks which was ten more than projected in the revised production schedule. Fourth quarter CY81 performance against that schedule is:

	OCT	NOV	DEC
SCHED:	24	28	28
ACTUAL:	32	29	38

Not previously discussed with GAO.

ALLEGATION 3: (Digest p.ii) With these uncertainties and the time still needed to ready a second tank plant for production, there seems to be no urgency to committing funds at this time for the M1's full production.

REJOINDER: This comment is speculative and pays no heed to the need to either (1) field a system that will meet the threat, (2) the current readiness of the Detroit Production Facility, or (3) the certain increases in cost if production is delayed.

Assessment of current production Soviet tanks highlight the absolute need to replace our M60 fleet with M1's as rapidly as possible. Reduction of currently authorized or budgeted planned production rates would result in the active forces not having the capability to effectively engage and destroy modern, currently fielded threat forces until well into the 1990's. The current M1 meets or exceeds the Army's major requirements for survivability, improved firepower, mobility and almost all established maintenance goals.

The tank meets the Army's current mission needs and should not be delayed while final production refinements (already implemented) are validated. The Army is confident the power train durability will meet established goals and believes the currently demonstrated levels will permit attainment of combat requirements.

Detroit ATP (GOCO) has already begun production with the first two M1's expected to be delivered in March 1982. The Detroit plant is continuing to produce M60A3's at 30/per month for FMS customers. M1 production at Detroit will increase to 30/month by November 1982, with 30/month also being built at Lima (Ohio). Both plants will ramp-up to 45/month each by February 1985. Adequate funds have been appropriated for necessary facilitization. The Army is confident that the planned production rates can be met. Funds have also been appropriated to facilitize AVCO's government owned engine plant to meet the planned production rate. Any reduction of current budget requests would result in stretching out the planned production build-up with attendant increases in cost due to inflation and loss of experience.

Not previously discussed in this great detail with GAO.

ALLEGATION 4: (Digest p.ii) The M1's power train failed to meet the Army's durability goal. The power train components are the engine, transmission, and final drive. In July 1981, when testing was nearly completed, the Army reported that the power train had demonstrated a 37-percent probability of meeting the requirement to achieve 4,000 miles without a need to replace a major component compared to the 90-percent probability required.

REJOINDER: The Army agrees that power train durability is an area that requires improvement. Corrections were made in both quality and design, and a power train demonstration test using production tanks will begin in March 1982 to confirm that we have achieved the durability requirement. Planned and projected power train durability is expected to exceed the Army requirement.

Discussed in detail previously with GAO.

ALLEGATION 5: (Digest p.ii) Actually, even this disappointing showing benefited from the performance of the transmission and final drive. Each improved substantially in durability after successful modifications were applied to correct earlier problems. The turbine engine failed to show similar progress. In the latest operational tests at Fort Knox, Kentucky, the replacement rate of failing engines was even higher than it was in tests held there in 1979.

REJOINDER:

The DT/OT III demonstrated power train durability is short of the requirement and is less than the performance during DT/OT II. This reduction in durability performance is due to process quality assurance and tolerance problems associated with transition from engineering line fabrication to factory building of production hardware. This view is supported by the Blue Ribbon Panel convened during July and August 1981 to review the power train durability potential of the M1.

Not discussed in detail with GAO.

ALLEGATION 6: (Digest p.iii) It would seem that the Army should also give serious thought to the potential offered by the diesel engine and have the engine demonstrate its capability in testing similar to what the turbine has undergone. The diesel engine may offer an alternative to the M1's turbine engine.

REJOINDER: When the Army selected the turbine engine for the M1 in 1976 it had significant quantities of data on the AVCR-1360 diesel since that engine powered the Main Battle Tank Model 70 prototypes as well as the General Motors XM-1 prototype. In 1979, the Army's choice of the turbine was confirmed by a panel of independent experts (Blue Ribbon Panel) convened at the request of the Secretary of Defense. A recent assessment of the developmental testing (DT/OT III) results (the same results cited in the GAO report) by a similar Blue Ribbon Panel concludes that the application of demonstrated fixes will raise the power train durability to meet or exceed the Army requirement of a .5 probability of completing 4000 miles without a durability failure. Changes designed to correct the deficiencies identified by the Blue Ribbon Panel go into production in March 1982. Stringent tests of tank power trains equipped with the modified engine will be conducted from March 1982-March 1983.

Previously discussed in detail with GAO.

ALLEGATION 7: (Digest p.iii) The Army's scoring system masks the fact that components failed much more frequently than shown by the official results.

REJOINDER:

The authors of the draft report imply that the methodology employed by the Army to evaluate test data obscures the existence of component failures and maintainability problems which could lead to higher-than-expected failure rates, and consequently, greater-than-anticipated demands for maintenance when the M1 is fielded. The implication is incorrect. Army test reports have clearly and unambiguously recorded all incidents of

requirements for unscheduled maintenance. The GAO report authors refuse to understand that in the testing of a new system, the Army must differentiate between systematic failures that are hardware design related and failures caused by crew error, misuse of equipment, and improper maintenance. The Army RAM-D assessment procedures screen out the human errors in order that the hardware system reliability and durability can be determined to assist in the development of plans for maintenance workload allocations between echelons, plans for spare parts provisioning, and in assessment of the effectiveness of test equipment and manuals.

One of the prime reasons the Army "scores" the pure test results is to add realism to the evaluation. Without question, the Army would not accept a tank that failed every 30 miles if the failures were significant. On the other hand, it would be preposterous to reject a tank or require more expensive development efforts because of failures such as loose clamps, defective light bulbs, missing bolts, etc.

This allegation was discussed in detail with GAO at the 16 October 1981 coordination meeting.

ALLEGATION 8: (Digest p.iv) Until the durability requirement is met, it appears unwise to produce large numbers of tanks.

REJOINDER: The tank's power train durability was carefully evaluated before the Army recommended the tank proceed into full scale production. The Army convened a panel of industrial, scientific, and technical leaders to evaluate the M1's power train durability. In August 1981, after evaluating the existing and planned power train corrections, this panel projected that after already designed corrections are made to the M1's power train, the power train durability should meet or exceed the Army's requirement. This, plus the fact the M1 tank is needed now, prompted the Army's full production decision and best efforts toward rapidly producing as many high quality M1 tanks as possible. We are now in production following the most extensive testing ever accomplished on any Army tank. As of 8 January 1982, 272 tanks have been delivered and are serving the Army well. Soldiers in the field believe the M1 is an outstanding tank.

Previously discussed with GAO.

ALLEGATION 9: (Digest p.v) The Army is aware that the engine's frequent failures would result in high maintenance and support costs.

REJOINDER: The Army's decision to field the M1 tank was not done in a cavalier manner, but was based upon a complete evaluation considering factors such as the urgency of the need for the tank, cost penalties associated with delaying fielding, the current level of design maturity of the tank and its support system, and tank production and quality control problems. Key inputs to the fielding decision came from the results of an Army-wide Fielding Readiness Assessment conducted during July 1981 and the findings of a panel of industrial, scientific and technical experts convened by the Army to evaluate the tank's

power train durability potential. The results of the Readiness Assessment conference included a conclusion that the tank was ready for fielding and could be supported. The panel of experts projected that after already designed corrections are made to the power train the durability should meet or exceed the Army's requirement. As a follow-up to this evaluation the FM M1 Tank System will be conducting a power train durability demonstration of production M1 tanks with all current proposed modifications beginning in March 1982. The Army's fielding decision has been deliberate and conscientous keeping in mind the soldier and taxpayer.

Discussed with GAO at initial coordination meeting.

ALLEGATION 10: (Digest p.v) Much of the advantage of early deployment could be lost if the tanks were to experience frequent durability failures and require frequent maintenance.

REJOINDER: The GAO's comment is a statement of fact; however, the Army has every reason to believe the tank's durability requirement will be met and the maintenance ratio is approaching required levels.

Previously discussed with GAO.

ALLEGATION 11: (Chap 2, p.5) Results of the operational and development testing indicate that as in all previous tests, the power train has still not met its durability requirement. Durability refers to the ability of certain components to operate a specific number of hours or miles without replacement. The requirement is for the power train to have a 50-percent probability of operating 4,000 miles without having to replace any of its three major components--the engine, transmission, or final drive. Emerging test results indicate this goal will not be met.

REJOINDER: The Blue Ribbon Panel's assessment clearly indicates that most previously identified pattern failures have been corrected in production. New failures have occurred, but corrective actions generally have been identified for these new failures. Based upon the implementation of corrective actions defined to date, the Panel projects that the power train is likely to exceed the required durability in tanks delivered in the third year of the initial production program (March 1982).

Discussed in detail previously with GAO.

ALLEGATION 12: (Chap 2, p.5) The power train's durability was measured at two test locations--Fort Knox and Aberdeen. The principal problems obviously remain with the turbine engine. In testing, it frequently lost power or totally ceased functioning. Diagnosis showed serious problems with bearings, worn seals, and failed couplings causing excessive oil leakage.

REJOINDER: It is agreed that the test results have disclosed failures which require corrective actions for acceptability. To that end an aggressive corrective action program has been underway to both improve the quality control aspects and design weaknesses disclosed during test.

Briefly discussed previously with GAO.

ALLEGATION 13: (Chap 2, p.5) To reach the power train's required durability necessitates each of its major components individually achieving a certain measure of durability. The turbine engine, for example, would have to log about 1,660 hours between durability failures. In the latest operational tests at Fort Knox, the turbine, after adjustments made in the aggregation conference, demonstrated a capability of logging an average of only 423 hours before the need to replace it arose. By contrast the transmission showed it could average 3,430 hours between durability failures against a goal of 1,098 hours. The final drive was not charged with any failures at all by the aggregation conference.

REJOINDER: The hourly goals used are obviously converted from the prime contractor's design apportionment of the .5 power train durability requirement (stated in Mean Miles Between Failures-MMBF) for each of the major components using a 10 mile per hour factor. The Army established the durability requirement for the complete power train and did not establish requirements for the power train components. The requirement is stated in Mean Miles Between Failures to avoid misinterpretation of Hours Between Failure as they might be applied to the turret, track or other component of the tank. Effectively, the GAO has established new criteria for the evaluation of the tank and then criticizes the Army because the tank has not met GAO's criteria.

Discussed previously with GAO.

ALLEGATION 14: (Chap 2, p.5) With all planned basic tests on the turbine engine nearly completed and the Army planning to enter full-scale tank production, the status of the engine's performance is crucial. It is also appropriate to reconsider an alternative to the turbine engine should it fail to show improvement in the next year. Further tests of the turbine engine are scheduled in 1982.

REJOINDER: While "basic" testing was essentially complete when the GAO report was drafted, development testing was not complete. This was not acknowledged, nor (apparently) was the work of the Blue Ribbon panel studying power train durability fully considered. The data base which GAO drew its conclusions from

represented early production models of the M1. Certainly, the Army is concerned about the failure to meet all RAM-D goals, but there is considerable effort ongoing to correct RAM-D problems. The decision to enter full production was carefully studied and all available information was considered.

The idea of switching to a diesel engine at some future time raises some very serious concerns:

- o development costs
- o added facilitization costs and delays while production lines are switched over
- o systems integration, associated uncertainty
- o added weight (about 1 ton)
- o an M1 fleet with 2 engines

Discussed in detail with GAO.

ALLEGATION 13: (Chap 2, p.5) Operational Testing: The four tanks at Fort Knox were tested 17,143 miles for durability. There were eight power train failures--five engine failures, two transmission failures, and one final drive failure. The durability test results at Fort Knox have been particularly disappointing. Not only did the tanks fail to meet the 50-percent probability goal, but the results were lower than in the previous round of testing at that location. At the previous tests, completed in December 1979, the power train exhibited a 47-percent probability of achieving 4,000 miles without requiring a component replacement. The expected durability growth since those tests did not materialize. Instead, the tanks only achieved a probability of 15 percent in the latest test.

REJOINDER: The current independent assessment of the durability of the M1 tank power train concentrated on the results from DT/OT III RAM-D testing. The results of those tests indicate a significant decline in power train durability from that assessed in February 1980. Specifically, against a requirement that by the end of DT/OT III the power train must have durability equivalent to 5,771 mean miles between durability failure (MMBDF) (.5 probability of no failures in 4,000 miles), demonstrated power train durability now stands at 2,740 MMBDF (.37 probability of no failure in 4000 miles). The decline in durability demonstrated between DT/OT III and previous tests is disturbing; however, much of the reduction can be attributed to quality, process, and tolerance problems associated with the transition of the hardware from closely controlled engineering fabrication to the production line. Again, the Army's assessment, supported by the Blue Ribbon Panel, is that tanks produced in March 1982 and thereafter will meet the .5/4000 durability goal.

The comparison used by the GAO, of the power train durability resulting from the latest tests to that experienced during 1979 is an "apples and oranges" comparison. The 15% probability is from raw OT III data. The .47 probability stated is an aggregate DT/OT II probability. The DT/OT III figure comparative to the .47 value is .37.

Generally discussed previously with GAO.

ALLEGATION 16: (Chap 2, p.6) Development Testing: The power train durability requirement will also not be met at Aberdeen. The probability calculation has been decreasing as more miles have been put on the three tanks tested there, as shown by the results of the five scoring conferences.

1st	2d	3d	4th	5th
(percent)				
100	100	51	41	34

There were three component failures (two on transmissions and one on an engine). As of the fifth conference, 10,984 miles had been accumulated on the three tanks.

REJOINDER: After final scoring of the data from the Aberdeen Proving Ground (APG) tests the power train durability for APG testing was .40, engine .69, transmission .58, final drive 1.

Not discussed previously with GAO.

ALLEGATION 17: (Chap 2, p.6) Engine replacements: In testing at all test locations up to July 27, 1981, 23 turbine engines or engine modules had to be replaced. These include engines in tanks tested for other than reliability and durability. Three failures were attributed wholly to design problems and 10 wholly to quality assurance. One failure was attributed to both. Nine failures were still under investigation at that date by the engine manufacturer, AVCO Lycoming.

The power train was still failing even after modifications were installed. At Fort Knox, for example, the latest modification was installed in February 1981. This was modification E. Following this, one engine had to be replaced in April and three others in May.

REJOINDER: The number of engine replacements indicated in the GAO report is essentially correct. However, it should be noted that the replacement was not always due to an inherent engine fault. For example, one engine module was replaced due to the damage caused by a loose starter, another due to pins bent in a fuel management harness. It should also be noted that these replacements were against a mileage experience of over 73,000 miles. The current analysis

of these engines indicates that the failures were essentially evenly divided between design and quality control. The latest Army durability assessment against the total power train (engine, transmission, and final drive) is .37 probability of completing 4000 miles against a requirement of .5. The current durability level of .37/4000 miles represents about four years of peacetime operation and does not pose a significant combat availability or support cost problem for the system.

Not previously increased with GAO.

ALLEGATION 18: (Chap 2, p.7) The Army recognized the lower acquisition and fuel costs of the diesel when it opted for the turbine, but anticipated recouping these costs through the turbine's projected greater durability and maintainability. However, the turbine has not achieved the durability and maintainability levels predicted for it. Further, its acquisition cost has risen significantly.

REJOINDER: The acquisition costs of the AGT 1500 turbine engine have risen significantly, mostly due to technical changes and manufacturing problems.

The Army still expects the turbine to demonstrate excellent RAM-D performance while delivering outstanding performance at about one-half the diesel engine's weight. Major performance benefits are:

- better (than diesel) cold start capability
- quieter operation
- no exhaust smoke signature
- better acceleration

Not discussed with GAO.

ALLEGATION 19: (Chap 2, p.7) Different opinions exist on how long it would take to get a diesel engine into production. Teledyne officials believe 24 months would be needed if development and operational testing were conducted concurrently with tooling and equipping the plant for production. The Army believes this would take about 40 months.

REJOINDER: Teledyne's estimate of 24 months would require (essentially) waiving the DT/OT test cycle and committing to production while development is completed. That premise is unacceptably risky since the advanced diesel is an emerging system. The Army estimate of 40 months is seen as high risk in itself and would require considerable concurrency (preparation for production during testing). The Army's estimate of a more normal development - production cycle is 72 to 84 months.

Discussed in detail with GAO.

ALLEGATION 20: (Chap 2, p.7) From all of the above, it would seem appropriate to reevaluate the relative merits of the turbine and diesel engines from the standpoints of affordability, performance, reliability, and durability.

REJOINDER: Contrary to the allegation which strongly implies that a turbine vs diesel analysis is possible, such a relative test is not possible at this time. The turbine is in production, the diesel is in early development. At best, it would be mid 1983 before initial comparative data would be available. Even if a decision to switch to the diesel were made, it would be FY86 (high risk army estimate) before first production could be achieved. To embark on such a course would slow production, stretch-out fielding, and almost certainly increase costs (from inflation alone, if from no other source).

The other result from a decision to produce a diesel engine M1 tank would be, of course, a two-engine fleet with accompanying logistics and support problems and costs, e.g. spares, training, and test sets.

Previously discussed with GAO.

ALLEGATION 21: (Chap 3, p.7) For the fiscal year 1981 contract still to be finalized, AVCO has proposed a unit price of $395,000 for 506 engines. In a September 1981 response to an Army inquiry, Teledyne estimated the price of its AVCR-1360 diesel engine at $110,000. However, installation of the diesel would require configuration changes to the tank whose costs are unknown.

REJOINDER: GAO cites the high cost of the turbine engine and then cites the much lower cost of the Teledyne Continental Motors 750-horsepower diesel engine used in the M60 tank. The GAO report implies similar costs for the Teledyne Continental Motors AVCR-1360 diesel engine, but in a recent letter submitted to the Army, Teledyne Continental Motors gave a rough estimate of $190,000 for the AVCR-1360. The Army estimates that the total cost of an AVCR-1360 engine program would be about $318 million (research and development, tooling and facilitization, and integrated logistic support); procurement costs would be in addition to the initial $318M.

Application of the diesel engine to the M1 would require extensive changes to the engine compartment, and changes in hydraulic line, electrical cable, and transmission interfaces. Also the floor must be dropped one inch reducing ground clearance. Air cleaners and fuel tanks must also be reconfigured. As indicated by the GAO these required configuration change costs are not known.

Discussed in general with GAO at previous coordination meeting.

ALLEGATION 22: Excessive maintenance requirements will limit M1's combat availability. (Chap 3, p.12)

REJOINDER: GAO's statement that Army figures indicate that the tank requires maintenance on the average of every 43 miles is misleading. The "43 mile" figure represents the total cumulative test mileage divided by the total number maintenance actions regardless of the significance of the maintenance action. On a more realistic basis the tank averages 350 miles before the occurrence of a failure affecting its ability to perform its combat mission. Other maintenance actions are performed as time and circumstances permit, normally in conjunction with regularly scheduled or routine daily maintenance services.

Previously discussed but not in this degree of detail.

ALLEGATION 23: Inadequate test sets and maintenance manuals contributed to high maintenance ratios on OT III tanks (1.34 to 1 vs. goal of 1.25 to 1). (Chap 3, p.12)

REJOINDER: Although the test M1's did not meet the OT III maintenance goal, the M1's maintenance ratio is better than M60A3's (1.34 (M1) vs. 1.49 (M60)). On-going improvements to manuals and test equipment are making quicker, more accurate repairs possible. This includes the seventh test set program up-date, as well as up-dated manuals and troubleshooting procedures available for Special Test Equipment M1 (STE M1) test sets for USAREUR fielding. The ninth program up-date is projected by September 1982.

STE-M1 fault definition, originally less than 50% (OT III), already has been improved to 80-90%. The Army's goal is 95% reliability when all program updates are completed. That goal is expected to be met by January 1983 when the test set program will be completed.

Not previously discussed with GAO.

ALLEGATION 24: Dramatic increase in program cost since inception (Chap 4, p.5)

REJOINDER: The GAO numbers are correct as far as they go, but do not adequately explain why M1 cost has changed as it has.

a. The original estimate of $1.4M per tank ($4.8B total) assumed:

- o quantity of 3312
- o 30/month production rate
- o one tank plant
- o 105mm gun on all tanks
- o no pre-planned improvements

b. Since that original estimate, all the cost criteria above have changed:

- quantity increased to 7058
- 90/month production rate planned
- two tank plants
- 105/120mm gun mix
- pre-planned improvements (block changes)

The attached M1 Unit Cost Summary illustrates the excellent cost control achieved to date. Note the original DTUHC goal of $507.8K (FY72) is now $529.5K (FY72), but the latter figure includes increased quantities and addition of the 120mm gun to 3216 tanks.

Not previously discussed with GAO.

M1 UNIT COST SUMMARY

	1972$K	1982$K	ESC$K
1. Design to Unit Hardware Cost (DTUHC) Goal - Established in 1972 and includes all manufacturing, engineering support, and Government furnished equipment.	507.8	1616.5	1971.0
2. Current DTUHC Estimate - Includes program changes associated with increased production capacity and quantity and the addition of the 120mm gun to a portion of total M1 buy (3216 tanks).	529.5	1685.6	2092.2
3. Rollaway Unit Cost Estimate - Includes hardware unit (above), initial production facilities (engineering and tooling) and system project management.	563.9	1795.2	2201.3
4. Procurement Unit Cost Estimate - Includes rollaway unit (above), peculiar support equipment, data, auxiliary services, training and system technical support, and initial spares and repair parts.	642.7	2045.8	2498.7
5. Program Acquisition Cost Estimate - Includes procurement unit (above) and all RDT&E.	732.7	2332.0	2660.3

ALLEGATION 25: (Chap 4, p.15) The planned production rate increases may be difficult to carry-out given Chrysler's production performance and problems. Unless production picks up quickly, the question of whether to accelerate production appears moot.

REJOINDER: There were early production problems at Chrysler, but the Army took aggresive action to manage these. Most significant were engine deliveries, turret machining, the thermal imaging systems (TIS), and production start-up and quality control at Lima (Ohio) Army Tank Plant.

Each of these areas, as well as other critical production issues are intensively managed. Recent results (below) indicate that efforts are paying off:

DELIVERIES (ACTUAL/SCHED)	TANK	ENGINE	TIS
Aug	21/21	30/25	33/33
Sep	17/23	31/35	34/36
Oct	32/24	*20/35	45/45
Nov	29/28	39/40	44/45
Dec	38/28	40/40	35/35

*Casting problem mentioned in GAO report

The production issue is far from moot. The problems are mostly associated with start-up of dormant facilities (i.e., Lima ATP), application of new technology (the tank turbine engine and TIS), and efforts to build toward a high production rate (90/mo) while incorporating new manufacturing processes. The Army recognizes these problems and issues, has budgeted the necessary facilitization funds, and is applying the best management effort possible.

Not discussed in detail with GAO.

ALLEGATION 26: (Chap 5, p.16) The Army plans to continue improving the turbine engine. It is also testing the alternative diesel engine. Therefore, the Army has the opportunity to compare the performance of both engines so that one of the two can be selected based on their showing in testing and their respective life-cycle costs. Prudence dictates that this opportunity not be overlooked.

REJOINDER: Although the Army plans to test the alternative diesel engine as part of the Congressionally directed Advanced Diesel Technology Program, it is unwise, based upon the current pressing need to counter the threat, to risk a 3 to 4 year delay in the M1 fielding while we evaluate performance of an unproven alternative diesel engine. The Army has every reason to believe the M1 turbine durability requirement will be met and our maintenance ratio is approaching required levels.

Previously discussed with GAO.

Mr. STRATTON. Mrs. Byron.

Mrs. BYRON. Mr. Chairman, I have a statement that I want to make. I think the thing that bothers me, and I am sure it bothers a lot of my colleagues, is I will go back into my office and I will check my messages or have people call me at home after we have had a series of news articles or a TV presentation and these are people that are strong supporters of the military and that have been strong supporters of the Army and their message is very simple, stop the M1 tanks.

If we have been a little rough with you all and asked some penetrating questions today, I think they are questions that need to be answered because otherwise, you know, I have got to go back and face my people who are telling me that we are cutting social programs and yet you are buying that tank that doesn't go anywhere and doesn't do anything and doesn't work and it needs a whole armada to go out to the field.

The public's perception right now is that to send an M1 tank out in the field, it is going to go with the bulldozer on one side and it is going to go with the fuel truck on the other side, and those people envision a whole entourage coming across the open field. This is a great disservice that has been done to a development in the tanking field that we have worked long and hard on. Most things have kinks in them when we develop them.

We have had testimony today, and I have talked to people that are tankers in the field here and over in Europe who are, you know, just waiting with bated breath for this to be in the inventory for use on a day-to-day basis.

So I think a lot of the questions that were put to you all today are ones that were important for us to be able to get answers to and to get in the record because I do have trouble going back with somebody that has been a strong supporter that says cut out the M1 tank.

I can now go back and say, OK, this, this, this and this, and I can refute their arguments because they have not gone into the depth and they perceive what they hear and they have just read.

So I appreciate you all taking the time to go as slowly and the detail we have had today because I think it is an important issue.

General MALONEY. Ma'am, we certainly share your concerns. I think that some of the frustration that we have felt as we have seen these media attacks occur came out in my rather intemperate choice of one word earlier, but we certainly understand that and we wish we could have greater access to the media. I would like to say that there are certainly elements of the media that have done the tank I think an objective service in reporting it, but there are a few, unfortunately rather powerful, that have recently really poisoned the well and I think incorrectly so.

Mr. STRATTON. Mr. Campbell, any questions?

Mr. CAMPBELL. No, Mr. Chairman. I have a few that I would like for them to respond to for the record.

Mr. STRATTON. We will submit these questions, General, and then you can respond to them in the record. I would like to get that cost analysis, General Ball, if you can.

[The following questions were submitted to the witness to be answered for the record:]

M1/M60 Comparison

Question. (1) What is the comparison between the M1 and the M60 in the 1500 horsepower diesel powered tank?

(2) Provide a breakdown by acceleration, maximum speed, slope speed, cross country speed, vehicle weight, and fuel consumption on a secondary road at various speeds.

Answer.

PERFORMANCE CHARACTERISTICS

	M1	M60A3
Acceleration, 0–20 mph—(seconds)	6	15
Max speed (mph)	45	30
Weight (tons)	60.1	57.3
Slope speed:		
10 percent (mph)	22	11
60 percent (mph)	5	1
Cross-country speed (mph)	35	15
Fuel consumption (road) (GPM)/(mph)	1.85/25	1.4/20

M1 Tank Direct Air Support

Question. The Air Force has indicated that it plans to shut down the A–10 line and, therefore, has not asked for any A–10 funds in fiscal year 1984. Without this production line the A–10 will start attriting from the force by the late 1980's. As you know, the primary mission of the A–10 is to provide close air support for the manuever battalions to include anti-tank support. It is equipped with a 30mm gun (GAU–8) for that purpose. If this plane attrites from the force without a suitable replacement what would be the impact on the M1 tank program? Would we need more tanks or what?

Answer. It is very difficult to estimate the effect of A–10 attrition in the late 1980's on the M1 tank specifically. The M1 is one system of many that operate together in combat. The Army is deeply concerned about the size of the Soviet tank force—one which continues to grow. The Soviets have fifty thousand tanks to our eleven thousand and out produce us by two or three times our production rate. We will certainly have no shortage of targets. However, we have confidence in our suit of anti-tank weapons such as the Hellfire equipped AAH and TOW equipped Cobra helicopters, ITV (with TOW), HMMV (with TOW), ground TOW, Dragon, FASCAM (mines), Copperhead and Rattler. The M1 tank is an important part of our anti-tank defenses but other systems help. I would like to suggest that the dollars saved by not procuring A–10's be invested in additional M1's—for the price of each A–10 one could procure 7 M1's. A good buy!

Armored Combat Earthmover

Question. There has been some confusion surrounding the role of the ACE in support of the M1 tank. What is the role?

Answer. The M9, Armored Combat Earthmover is a highly mobile armored earthmover designed to move with the mechanized infantry and armor force and provide combat support in the forward battle area. The confusion regarding the relationship of the M9 with the M1 tank has resulted from suggestion, in the media that one M9 is needed per tank and that all the M9 is expected to do is dig in the M1 tank. Neither assertion is true. In the typical Armored Division, there will be about 350 tanks, 340 fighting vehicles and hundreds of other armored vehicles (including other weapons systems, self-propelled artillery and command and control vehicles). The engineer batallion organic to either of these divisions is equipped with 25 M9's, hardly a one to one ratio.

The M9 will accomplish a variety of critical tasks in support of the combat force including the following:

Preparing hull defilade fighting positions for guns, fighting vehicles and tanks to increase survivability of these weapons systems; preparing obstacles such as anti-tank ditches; preparing tactical river crossing sites and providing the necessary

earthmoving support to help clear or bypass other obstacles to our mobility on the battlefield.

Question. I understand the quantity (36) which was authorized in fiscal year 1982 is under review. If so, what are your plans for the $40.4 million appropriated last year?

Answer. The original program presented in the fiscal year 82 budget envisioned a two year initial production program (fiscal year 82/83) with the developing contractor, followed by an unfunded "skip year" in fiscal year 84, to validate the technical data package (TDP), complete initial production testing and prepare for the follow-on competitive multi-year buy beginning in fiscal year 85.

We have reduced planned sole source buy from 87 vehicles (fiscal year 82/83) to 25 vehicles in fiscal year 82. Completion and validation of the TDP and other initial production requirements have been accelerated to allow competitive award of the multi-year contract in fiscal year 84.

The fiscal year 82 funds freed by this quantity reduction will be used for incoroprating improved technology in the design (type classified in fiscal year 77), a RAM-D improvement program, and for improving the technical data package. This investment will result in a better production vehicle and significant savings during the follow-on multi-year production.

Question. I we don't buy the ACE, how will that impact the combat operations and survivability of the M1 tank?

Answer. When organized for battle, tanks are normally combined with other weapons systems and combat engineers to form a combat force that has greater combined combat power than the components have individually. Without the M9, the combat engineer element of this combat force will not be equipped to accomplish the critical tasks expected of them. Because of the interdependence of the elements, this will impair the combat effectiveness of the combined combat force including the tanks.

M1 Diesel Engine

Question. Would you explain why it would take another 3½ years to bring into production an engine concept that initially went into development testing back in fiscal year 1976 some 6–7 years ago.

Answer. When the turbine engine Chrysler prototype (XM1) was selected for production, Army funded development of the 1500 hp Teledyne Continental diesel engine ended.

In fiscal year 79, Congress directed continued development of the advanced 1500 hp diesel engine. Development has continued since, but a 1000 hour bench test was halted in September 1981 after 219 hours when the superchargers failed. The test was restarted in March 1982.

The bottom line is that the 1500 hp diesel engine still requires more testing and development, including testing in an M1 tank chasis, scheduled from 3d Quarter fiscal year 82 through 3d Quarter fiscal year 83. It would only be sometime after these tests that a side-by-side diesel-turbine analysis could be done.

M1 Long Lead Funding

Question. What long lead components are you planning to buy, and why must they be purchased as long long lead items?

Answer. The long lead components, paced by sub-assemblies of the engine and fire control systems, castings and bearings must be purchased in advance of each fiscal year's tank buy because of the relatively longer production times required for these components.

The economic benefit of advanced procurement is program stability, reduction of risk, and assurance that necessary components and hardware with long lead-times will be on hand to support production.

M1 Turbine Design

Questions. (1) If the design change testing does not prove successful, will you consider changing the engine to diesel?

(2) In view of the problems (powertrain, maintenance ratio, track durability) would it not be wise to level off production at the 665 level authorized for fiscal year 1982? This particularly true since your forecasted production for fiscal year 1982 is already behind schedule and your're just starting your second production line at the Detroit Tank plant.

Answer. While the Army will not eliminate any options, we expect the modified turbine engine to meet the durability requirement. This assesment is corroborated by the independent Blue Ribbon Panel's evaluation of powertrain modifications.

Powertrain durability, maintenance ratio, the track life are the only design or RAM-D parameters not met, and we fully expect to meet the durability and maintenance ratio goals. Capping production would not be prudent from a management or a military effectiveness standpoint.

M1 Maintenance Ratio Problem

Questions. (1) What is the relation of MMBF and the amount of time required to maintain the M1?

(2) What is this maintenance shortfall costing?

Answer. Improvements in Mean Miles Between Failures (MMBF) reduce unscheduled maintenance requirements, thus contributing to an improved maintenance ratio.

As far as a maintenance shortfall is concerned, note the M1 has achieved a 1.34 maintenance ratio vs. a goal of 1.25. This is very near the goal. Indications are the maintenance ratio will come down further as using units gain more experience wikth the M1, and as the tanks with modified power trains enter the inventory.

The Army as not specifically estimated the maintenance cost differential due to a 1.34 maintenance ratio vs. the 1.25 goal.

M1 Fuel Consumption

Questions. It has been reported that the M1 tank uses about four gallons of fuel to cover one mile.

(1) Why is this?

(2) How does this compare with the M60A3 tank?

(3) How does this affect the M1 tank's combat cruising range?

[Note.—The requirement is 275–325 miles and the M1 has only demonstrated 230–245 miles].

(4) Does this add to the fuel tanker requirements, and if so how much?

Answer. In the hardest cross-country, combat maneuvering the M1 requires about three and one-half gallons per mile compared to about 2.4 gallons per mile for the M60A3. The M1's higher fuel consumption was a deliberate trade-off to get the performance of the 1500 hp engine.

The road range of the M1 is 245 miles at 25 mph. At 28 mph, the turbine engine is more efficient and the 275 mile requirement can be met. Fuel consumption at road speeds of 25 mph is 1.85 gallons per mile (estimated 1.78 gpm at 28 mph). The M60A3's fuel consumption at a 20 mph speed is 1.4 gallons per mile.

The M1 meets the Army's tactical scenario of refueling once daily, as does the M60A3.

M1 batallions will require five more fuel trucks than similarly equipped M60 battalions.

M1 Tank Training

Question. During the period of fiscal year 1981 to fiscal year 1984 the Army plans to spend $153 million on training equipment with a $58.2 million request for fiscal year 1983. Specifically, what kind of training equipment is being purchased and at what cost? How do you plan to distribute this equipment and will it free up M1 tanks which are now specifically used for instructional and hands-on training?

Answer. In the fiscal year 1983, the Army is planning to procure 26 Unit Conduct of Fire Trainers (U-COFT) at a total cost of $54.6M. In addition, we are also planning to procure the following maintenance trainers:

[In thousands of dollars]

Type	Quantity	Total cost
Electric hydraulic panel trainer	7	775
Thermal sight panel trainer	1	112
Laser range finder panel trainer	2	221
Hull electrical panel trainer	6	666
Engine panel trainer	6	666
Transmission panel trainer	6	666

Type	Quantity	Total cost
Total	28	3,106
Engineering support		494
Total		3,600

The Basis of Issue Plan (BOIP) for the U-COFT procured in fiscal year 1983 is 11 to USAREUR, and 15 to Fort Knox. The 28 maintenance trainers will be provided to the Ordnance School, APG, MD to train DS/GS repairmen.

The U-COFTS going to USAREUR will not free up tanks. These are going to operational units to sustain tank crew proficiency training between visits to the major training areas. Those U-COFTS going to the training base (Fort Knox) may free up some tanks currently used for training, but this determination will be made once they are fielded and U-COFT training effectiveness can be fully evaluated.

The maintenance trainers are currently being fielded. These are used to preclude an increase in the number of tanks required by the Ordnance School to support DS/GS maintenance training.

M1 Tank Delivery Schedule

Question. I understand that the Army plans to ramp up to 30 per month at each tank plant (Lima and Detroit). The December 31 SAR, however, reports that you are currently 49 behind your planned delivery schedule of 310. You indicated that engine production shortfalls have contributed to this, but what are the solutions?

Answer. As reported in last year's testimony, the Army estimated production of 284 tanks through December 1981. At the end of December 272 M1's had been delivered. By the end of January, 296 tanks were accepted. This put production 27 behind the forecast reported last year, but *3* ahead of the production forecast as revised in July 1981. The revision in July was necessary because Chrysler changed its basic production plan.

Engine shortfalls were a major factor in the earlier production problems, but present indications give us reasonable confidence in the current production schedule. Intensive management is still required as we pursue the plan to ramp-up production.

M1 Tank Supplemental Request

Questions. DoD has submitted a $126 million fiscal year 1982 supplemental budget request for M1 tank surge support.

(1) What components will this buy?

(2) If these components are pacing items, can the production base support the requirement without impacting on the tank delivery schedule?

Answer. The supplemental request for production surge will be used primarily to procure long lead time components of the engine and fire control systems, but some other items such as forgings, castings, and connectors will be included.

We estimate the production base can in fact efficiently absorb these additional 180 sets of hardware because this procurement only increases the vendor demand by 15 sets a month through the fiscal year 1982 funded delivery period.

M1 Production Rate

Question. Are there also production line or quality control problems at Lima which are contributing to the unsatisfactory production rate?

Answer. While the production rate is not what we hoped to have by this point, it is not unsatisfactory. The Army judges the production rate today as marginally adequate, and within an acceptable risk band, there is good confidence that production will improve about as forecast. The shortfall in January was the result of 38 deliveries in December, which bled the production line dry.

The key to improvement is production control at Lima; the Army will continue to intensively manage this process.

M1 Tank Second Sourcing

Questions. (1) Given that by the end of fiscal year 1985 over 60 percent of the Army's initial operational objectives will have been procured and that the second sources probably could not come fully on-line before fiscal year 1985 of fiscal year 1986, does it make economic sense to consider second sourcing?

(2) What is that status of the second sourcing for the fire control system and the engine, and how much is requested in fiscal year 1983?

Answer. Second sourcing makes sense and will directly or indirectly bring efficiencies to the program. Second sources for critical components will increase the probability that those items will be avaliable to supprt increased tank production. Second sourcing should also return some long term economic benefits.

A decision on whether or not to proceed with plans to second source fire control components will be made by May 1st, after a multi-year contract proposal from Hughes is analyzed. The procurement plan for engine second source is being developed now; the RFP is scheduled for release about 1 June.

The fiscal year 1983 budget contains $80.6 million to begin second source fire control development. Fiscal year 1983 funding for engine second source development is $25.4 million.

CDI Sale Impact on Production

Question. What leads you to believe that the contractor will be able to deliver on schedule the 776 tanks requested in the fiscal year 1983 budget? Perhaps this is overly optimistic under the present circumstances. Should the buy be reduced this year until the contractor demonstrates it can meet the present delivery schedule?

Answer. No, the fiscal year 1983 buy should not be reduced. Indications are General Dynamics will devote quality management resources to tank production. We have worked very hard and invested large sums to build-up tank production; a reduction now would be inappropriate. The current production plan can be executed with an acceptable degree of risk.

Interim Goal of Producing 90 Per Month

Question. When you reach the 90 per month rate, will you still be producing M60A3's and at what rate?

Answer. We will reach 90 M1's a month in February 1985. M60A3 production is based on confirmed FMS cases and current orders will be filled in December 1983.

Mr. Stratton. Mr. White, do you have any questions?

Mr. White. No.

Mr. Stratton. Mr. Klein.

Mr. Klein. No.

General Maloney. Mr. Chairman, we understood that you might ask for a copy of a cost analysis that was mentioned by Mr. Ambrose, the Under Secretary of the Army at a different hearing I believe. We have that analysis and would be pleased to provide it for the record. It really tells you everything anybody could have ever wanted to know about the costs of the M1 program.

Mr. Stratton. I don't recall requesting it, but we will be glad to accept it and see if we can understand it.

[A copy of the M1 cost analysis is on file with the committee.]

Mr. Stratton. Mr. White.

Mr. White. The M1 is over in Switzerland now on a head-to-head competition with the Leopard. You will recall we had a head-to-head competition a couple years ago and managed to lose that in the Netherlands largely because of the financial arrangements.

One of messages which was sent from a number of people in the Congress was don't get into this competition again unless you intend to win because it is going to have a very bad psychological impact on the troopers who have to use this tank if they are told that it has gone head to head and lost twice. They are not going to understand the financial arrangements.

We understand that the competitive pricing now of the M1 that we will propose to the Swiss includes foreign military sales surcharges which amount to as much as 25 percent of the tank.

Now I understand the concept of foreign military surcharges, but they have really worked in a seller's market where there was no competitor and were never, it seems to me, intended to handicap U.S. industry to compete.

Is that essentially true, General Ball, that the surcharges amount to that much and that they are going to be a handicap to us in the competition that is going to take business away from American industry potentially?

General BALL. I think clearly, Mr. White, the surcharges are a very substantial add-on, about $320,000 FMS surcharges to the price of the tank. If we start out with a price, which is the quote we have given, of $1,546,000 per tank in fiscal 1982 dollars for tanks in 1986 and 1987, by the time the surcharges and all charges are added on, we are up close to a $2 million tank. Of that, $207,000 per tank are nonrecurring costs.

So certainly I don't know with precision what the cost of the competitor tank is. I am confident that certainly without the surcharges this tank costs less to manufacture. I think it is probably somewhat marginally less even with the surcharges but probably quite close.

Mr. WHITE. Do you see any strong evidence of support in the top levels of DOD to promote this competition and to promote the U.S. sale of this tank?

General BALL. No, sir. In what has been visible to me I have not seen that.

Mr. WHITE. Thank you, Mr. Chairman.

Mr. STRATTON. Do I understand, Mr. White, that we are already trying to sell this to our allies in Europe?

Mr. WHITE. To the Swiss, Mr. Chairman, for delivery in the 1986–1987 timeframe.

Mr. STRATTON. I was just wondering about the wisdom. I thought this tank is supposed to be a new development and we might not want it to fall in the hands of the Soviets or even be available to close Soviet agency inspection. If we are going to start dropping them all over Europe before we get our own we will be in trouble. This will be obsolete by 1986, will it? This is the same problem we had with the AWAC's, you know. They said if we give it to the Saudis the Russians will pick it up.

General BALL. No, sir, it is certainly not obsolete by 1986. This has been of course reviewed through both the Department of Defense and State as to whether we were willing to pursue or to respond to the initiative, the inquiry. We have other inquiries as to interest and potential foreign military sales of this tank. This is the only one that is active at this time.

As for the armor technology, we have special security arrangements. I have an officer physically at the test site in Switzerland for the duration of the test.

Mr. STRATTON. You have got an officer where?

General BALL. At the test site in Switzerland assuring that the——

Mr. STRATTON. One officer is going to protect the tank against all of the Soviet operators that are over there in Zurich and Basel and all of those other watering spots?

General BALL. Sir, the sensitive portions of this armor are behind quite secure armor plate. Yes, sir, we feel confident in the security arrangements.

Mr. STRATTON. I think we are making a mistake in trying to sell these before we get them out to our own forces. That would be my opinion.

We are going to have to close, General.

General MALONEY. Sir, very briefly, we did not respond to Mrs. Holt's earlier question about the Guard and Reserve. We will provide that for the record and directly to Mrs. Holt.

[The following questions were submitted to the witness to be answered for the record:]

Mrs. HOLT. I would like for the witnesses to explain what the Active Army is providing in fiscal year 1982 in terms of tracked vehicles, tanks, armored personnel carriers, et cetera, to the Army National Guard and Reserve units.

In fact, Mr. Chairman, it may be useful to have the witnesses describe in general terms the process that the Army goes through in deciding how equipment is allocated to Guard and Reserve units. We need to understand their rationale because I know for ten years I have been struggling in trying to figure out what it is and I still don't know.

ANSWER. Equipment procurement for the total Army force, i.e., the Army National Guard and Army Reserve, as well as the Active Army, is included in the fiscal year 1983 Budget. Although no funds have been specifically earmarked for any particular component, both of the Reserve Components will realize additional equipment from the fiscal year 1983 funding request. This additional equipment will result both from direct distribution of new procurement and from redistribution of items from higher priority Active and Reserve component units based on total force distribution priorities at the time fiscal year 1983 procurements are delivered. Specifically, the Army National Guard and Army Reserve are slated to receive, in part, the following selected list of items as a result of fiscal year 1983 budget funding. This list is based on current distribution plans.

QUANTITY

Item	National Guard	Army Reserve
M60A3 tank	58	9
Improved TOW vehicle	209	0
Lightweight company mortar system	47	9
Battery computer system	3	0
Fire support team vehicle	18	0
Combat support boat	38	24

Equipment is distributed to Army units, both active and reserve components through two methods: direct distribution and redistribution resulting from the modernization program. Direct distribution is the allocation of equipment items from new procurement to units; redistribution is the allocation to lower priority units of equipment that is freed up from higher priority units as a result of initial distribution of modernized equipment to those higher priority units. In any event, equipment is distributed/redistributed to units based on total force distribution priorities in being at a particular point in time. Distribution priorities correlate to the order in which units would be employed in combat, regardless of component. Distribution priorities for specific units in the force change periodically as missions of the Army change and as units in the force structure are realigned to best support these missions.

General MALONEY. I would like to say, sir, that since we are running out of time and we have not presented information on the Bradley or the MLRS, that I would like to recommend that their statements be inserted in the record.

Mr. STRATTON. Well, I think we will have you here for another session. I don't think we can just put this stuff in the record and vote on it.

Obviously this tank is an important matter and we need to have spent the time on it. I think there are problems with these other vehicles as well, and we are going to have to spend some time on them.

We will ask you to come back tomorrow, General, tomorrow morning at 10 o'clock and then we will try to see how we can adjust our schedule from there.

We will stand in adjournment until 10 o'clock tomorrow.

[Whereupon, at 4:40 p.m., the subcommittee recessed, to reconvene at 10 a.m., Thursday, March 18, 1982.]

ARMY TRACKED VEHICLE PROGRAMS—SPECIFICALLY ON JOINT ARMY/MARINE CORPS LIGHT ARMORED VEHICLE (LAV) PROGRAM

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Thursday, March 18, 1982.

The subcommittee met, pursuant to notice, at 11:30 a.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

We have been delayed this morning of course because of six votes on the House floor on matters that were considered a couple of days ago. We may find our morning schedule truncated a little bit, but this morning we are going to receive testimony on the Army's tracked vehicle program and specifically with regard to the joint Army/Marine Corps' LAV program.

The central issues regarding the LAV program are:

1. Whether the Army and Marine Corps are going off in different directions despite congressional and OSD instructions to develop a joint program.

2. How the so-called far-term requirement for a mobile protected gun [MPG] relates to the near-term requirement for an off-the-shelf light armored vehicle with a 25-millimeter cannon.

This year the Army is requesting $111.3 million to buy 175 LAV's, and the Marine Corps has asked for $89.7 million to purchase 134 LAV's. However, before these funds can be authorized, it is my belief that the Department must demonstrate that the Army and the Marine Corps have at least agreed on the requirements for the near-term LAV program and are not going off in different directions.

Further, the committee would like to review the cost projections for both the near-term and the far-term programs.

Frankly, since the near-term LAV program is supposedly for a nondevelopment, off-the-shelf vehicle, it is not clear why the unit cost is now over $600,000. If that is the cost for an off-the-shelf vehicle, I hate to imagine what the far-term vehicle may cost. Can we afford it? These are the issues this committee needs to examine.

The committee is anxious to hear from our witnesses this morning who are Brig. Gen. Donald S. Pihl, Deputy Director of Weapons Systems Office, Office of the Deputy Chief of Staff for Research, Development, and Acquisition, U. S. Army; Brig. Gen. Robert F. Molinelli, Deputy Under Secretary for Tactical Warfare Programs, Department of Defense; Maj. Gen. Harold G. Glasgow, Deputy for Development/Director, Development Center, U.S. Marine Corps;

Col. Joseph O'Brien, Light Armored Vehicle Program Manager, U.S. Marine Corps; and Col. James Welsh, Mobile Protected Gun System Program, U.S. Army.

Our ranking minority member, Mrs. Holt, is detained for recognition under the 1-minute rule on the floor. She will be prepared to make her remarks when she returns.

So our first witness is General Molinelli. General, do you want to proceed?

STATEMENT OF BRIG. GEN. ROBERT F. MOLINELLI, USA, DEPUTY UNDER SECRETARY OF DEFENSE, TACTICAL WARFARE PROGRAMS, DEPARTMENT OF DEFENSE

General MOLINELLI. Mr. Chairman and ladies and gentlemen, we are pleased with this opportunity to speak with you today on the light armored vehicle, or LAV, program. These vehicles are destined to be of great importance to our land forces, since they represent a step forward in our ability to provide protection, mobility, and firepower to our light units. I would like to begin by outlining the history of the LAV program and the overall needs that it fills.

Brig. Gen. Pihl, U.S. Army, and Maj. Gen. Glasgow, U.S. Marine Corps, will provide more detailed information concerning quantities of buys, deployment and their specific needs.

Our options to cover the potential battlefields of the world are few indeed. The shipping of equipment is too slow. Pre-positioning is expensive in that it demands maintenance and protection of a large inventory in foreign countries. Pre-positioning also assumes that we can predict where the stocks should be emplaced. Thus, airlift is a very attractive alternative.

However, our capacities are simply too limited for the job. For example, with an allocation of 115 C–5's for the 1989 timeframe, we could airlift only 230 M1 tanks during combat. With the same number of C–5's we could lift approximately 1,035 LAV's. Thus, we are in great need of an armored vehicle which, like the M113 can be airlifted in large quantities, but which provides the fighting capacity necessary to survive and win on today's battlefield.

The LAV program grew from a desire on the part of the Army and Marine Corps for just such a vehicle; that is, 14.5 tons maximum weight, acceleration from 0–20 miles per hour in 10 seconds, top speed of 50 miles per hour. Studies have been conducted over the years to quantify the benefits of mobility and agility on survivability. The armored combat vehicle technology [ACVT] program which compiled and extended the results of these studies, led the services to conclude that a lightly armored, but highly mobile and agile vehicle, can be employed in such a way as to considerably reduce its susceptibility to an enemy gunner.

In 1980 the Marine Corps testified to Congress of the need for and viability of a light armored vehicle. The Army was interested, but felt that the Marine Corps' IOC date of 1983 was unnecessarily early for them.

Further, the Army was not yet certain of its requirements. Congress funded a Marine program to evaluate studies to provide candidate vehicles for test and evaluation.

The Marine Corps had decided on a near-term program to produce a family designated as light armored vehicles (LAV's) and a far-term effort to develop a gun vehicle. They determined that the latter would carry a high pressure 75 millimeter gun currently under development and would be a higher performance vehicle than the LAV. The Army opted for the same system. This long-term program is now also joint and is called mobile protected gun system (MPGS). It is an R. & D. effort with no procurement money planned for some time. Therefore, it will be discussed only in relation to the LAV.

OSD insisted that the vehicles chosen (or developed) be common to both services. Thus, the Deputy Secretary of Defense conditionally approved the mission element needs statement with the following statements:

> * * * because of the similarity of needs, only one program to acquire a near-term light armored vehicle program will be supported; it must meet the needs of both Services * * * I expect the Army and U.S. Marine Corps to acquire essentially the same vehicle. The needs are basically similar and meeting them is long overdue. Every effort will be made by both Services to expedite delivery of this urgently required system. I have directed that the USDR&E intensively monitor this program to Insure that critical milestones are accomplished and the IOC of 1983 is met.

On June 5, 1981, an MOU was signed by both services creating a joint LAV program. This MOU reaffirmed their intention of sharing one family of vehicles and designated areas of reponsibility. The MOU stipulated that the Marine Corps would furnish the project manager, source selection evaluation board chairman, and the test director. The Army is supplying the source selection authority, and a deputy program manager. Joint participation has been infused in each of these categories, with soldiers and marines working side-by-side throughout.

It was agreed that, due to time constraints (the U.S. Marine Corps' 1983 IOC), extraordinary measures would be demanded within the acquisition system. On September 11, 1981, three firms were selected to furnish four vehicles for test and evalution. They were:

Cadillac Gage Corp	V-150	(4x4)
	V-300	(6x6)
GM (Canada)	Piranha	(8x8)
Alvis (London)	Scorpion/Stormer	(Track)

These vehicles have been undergoing testing since November 1981.

In December 1981 an RFP was sent to each of the three competing firms asking them to respond to the procurement phase of the LAV program. The procurement phase RFP asked each contractor to provide costs for production of a specified number of three variants of the LAV, to be tested for acceptability during the first year of production.

Also, the development of additional variants, some of which constituted an optional buy, was to be priced. In some cases the variants were given different names by the two services, although they are the same basic vehicle.

The vehicles to be produced directly are a 25 millimeter Bushmaster Garn vehicle—(called the light assault [LA] by the Marine Corps and the mobile protected gun near-term [MPG–N] by the Army), a Marine Corps vehicle which will probably carry a 90 millimeter low pressure gun, (called an assault gun [AG] variant), and a vehicle to be used by both services.

Other variants which may be produced after a short R. & D., program are the anti-tank variant which will carry to tow system, the mortar variant to transport an 81-millimeter mortar, a logistics variant for transport of supplies, an air defense variant, a command and control variant, and a light armored squad carrier, to carry an infantry squad. All of these variants are based on the same vehicle.

The light armored squad carrier [LASC] is scheduled for purchase in fiscal year 1984, unless the high technology test bed (the 9th Infantry Division) decides that it is too heavy for the needs of the light division.

OSD views this as an important program. Our major intent is threefold. First, that this vehicle satisfy the light force needs of both services. Second, the unit cost must be controlled. Clearly there is a price above which alternatives to the LAV family will be sought. Third, that this program pursue its original goal, the purchase of an essentially off-the-shelf vehicle. We will continue to interest ourselves in these aspects of the program, and in the eventual integration of the long-term MPGS system into the program.

At this point I would like to introduce Brigadier General Pihl who will discuss the Army's portion of the program. He will be followed by the Marine Corps representative, Major General Glasgow.

Mr. STRATTON. Do you have any pictures so we can see what this vehicle looks like?

General MOLINELLI. Yes, we do. We will give you a picture of the Cadillac Gage vehicle. It is not very good, there is too much light.

This is the Cadillac Gage in the V–150 configuration. That picture is of the 90 millimeter low pressure gun.

Mr. STRATTON. I thought it was 25 millimeter?

General MOLINELLI. There are two variants being tested. One a 25-millimeter Bushmaster and the other an assault gun, a low-pressure gun, 90 millimeters.

Mr. STRATTON. What is a 25 millimeter supposed to do?

General MOLINELLI. The 25 millimeter is the gun currently going on the Army's Bradley Infantry Training Vehicle. It gives us the ability to penetrate light armored vehicles at extended ranges and also it has a high explosive round which is used against troops and other lighter vehicles.

Mr. STRATTON. Is this Bushmaster, is this part of the procurement?

General MOLINELLI. Yes, sir, it is intended that the first part of the procurement for both services will procure a 25-millimeter gun on the winning competitor of the light armored vehicle program.

Mr. STRATTON. You mean the light armored vehicle is going to have nothing but a 25-millimeter gun?

General MOLINELLI. That is correct, sir.

Mr. STRATTON. Here we are building tanks with 120-millimeter guns and we say the Russians are going to have 125-millimeter guns and then you go down to 25 millimeter.

Why don't we just put our 45 calibers where we want to get rid of them, so we can have a 9-millimeter and why don't we put them in the tank? I don't see what the point is of having a small gun when you are supposed to be trying to gun yours against the other side. This looks as though we are going backward.

Here we build a 60-ton tank, the greatest thing that we have ever seen as we got evidence yesterday, and now we want to come in with a little armored jeep or something or other with a 25-millimeter gun. It doesn't seem to make sense to me. And you come to us and ask for $200 million and you haven't even selected the vehicle.

I wou[illegible]ink we ought to find out what the vehicle is, rather than give [illegible] money and let you make the selection. I would feel we ough[illegible] what you are suggesting. I wouldn't want to even give my w[illegible]00 and tell her to "Go down and buy whatever car you want[illegible]d like a little opportunity for some consultation on that.

Once we give you the m[illegible]. you are running free.

General MOLINELLI. Mr. C[illegible]rman, in reference to defeating armor we intend for the tank to be used to defeat the heavy armor. The 25-millimeter vehicle is chosen for its agility and its mobility and intended to defeat light armor vehicles.

Mr. STRATTON. But we had the light armored Sheridan, and that proved to be a disaster, and the Army quietly a couple of years ago decided to retire it. Why are we going back to that same thing again?

It looks to me as though you people have been told that this is the year to fix up the defense and so everything that you have got sitting around you are going to put into the defense budget just to try it out. That is:

> Let us get the biggest things possible and the smallest vehicle possible, an idea that has been cooking around there since money is going to be no object, you might as well put it in and those suckers in the Armed Services Committee will go for it because they always go for anything that we request.

I don't even see the mission of this particular vehicle, and General Barrow told us he didn't think the one you were talking about would really meet the Marines' requirements anyway. So what is the point of our making a multipurpose vehicle when the commandant of one of the services involved says he doesn't think this is the way to go.

WRITTEN STATEMENT OF MAJ. GEN. HAROLD B. GLASGOW

Mr. Chairman, distinguished Members of the Committee, I am honored to appear before you today to testify on the Fiscal Year 1983 Marine Corps Budget Submission for Light Armored Vehicles. Our budget which emphasizes readiness and sustainability includes modernization efforts to enhance the capabilities of the Marine Air Ground Task Force (MAGTF). The Light Armored Vehicle Program is a joint effort with the U.S. Army as a result of direction from the Secretary of Defense. This effort has been highly satisfactory and successful. We are pleased with the cooperation and support that we have received from every level within the Army and OSD. This cooperative spirit will insure that the extraordinary measures being taken to acquire an essentially "off-the-shelf" LAV, without the extensive re-

search and development times associated with the normal acquisition cycle, are successful.

Today I would like to focus on the Marine Corps' requirement for light armored vehicles, our intended employment of those vehicles and our plan to achieve our goals in the Light Armored Vehicle Program.

LAV Requirements

Helicopter transportability by heavy list—helicopter (CH-53E).

Survivability: Armor protection against nearby artillery airbursts, antipersonnel mines, and small arms fire; active and passive system defense.

Rapid cross country mobility, agility and endurance.

Enhanced fire support for ground forces.

Light Armored Vehicle Program Mission Variants

Vehicle roles: Light assault, assault gun, antitank, command/control, mortar carrier, recovery; air defense; logistics.

All variants will use the same basic hull, chassis, power train, and suspension components.

The Marine Corps supports the Mission Element Need Statement approved by the Secretary of Defense for both Services. The need for rapid strategic deployment, tactical mobility, reasonable survivability and assault capability are basic to the LAV requirement.

The Marine Corps requirement for light armored vehicles, like that of the Army, stems from the need to improve the tactical mobility and firepower of our ground combat forces. In our approach to this effort we sought to fulfill the four fundamental requirements of helicopter transportability, survivability, cross-country mobility, and fire support.

We intend to field a family of light armored vehicles and employ them as a tactical fighting unit.

Our current plans call for the eight mission variant roles shown on this slide to be satisfied by light armored vehicles. This family will have a common chasis, power plant and other components that, with minor modifications, may fill the variant roles within the tactical organization. I want to emphasize our requirement for this "baseline vehicle". It is not our intention to "goldplate" or develop a complex and costly family of light armored vehicles. Each capability required for the light armored vehicle is considered essential to meeting our operational needs. These capabilities are shown on the next two slides.

Light Armored Vehicle Specific Capabilities

applies to all variants

RAM-D: (limited to automotive chassis components) reliability: 0.90 (200 mile mission); availability: 0.85; durability: 20,000 miles/overhaul.

Transportable by tactical and strategic aircraft: CH-53E, C130, C141, C5A.

Percent no go: 10 percent max Germany dry conditions.

Cross country V80 speed: 17.5 mph min.

Road speed: 50 mph min.

Cruise range: 400 miles min.

Swim capability: 3 mph min.

NBC protective system: individual growth to collective.

Protection level: NATO 7.62mm ball min (0°—obliquity, 0—range).

Diesel engine.

24 volt electrical system.

Automatic transmission.

Driver night vision.

Smoke capability: grenade.

Intercom.

Receiver, transmitter, receiver.

Secure voice.

Grade capability: 60 percent min.

Side slope capability: 30 percent min.

Vertical obstacle: 18 in min.

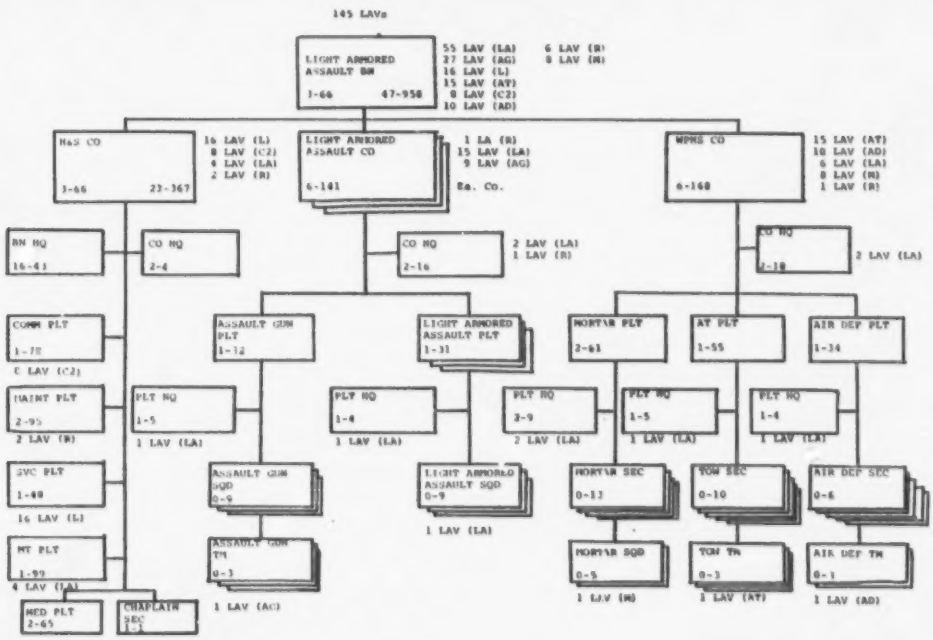
Personnel heater.

Slave capability.

Ventilation of vehicle interior.

The Marine Corps concept of employment for the light armored vehicle centers around a maneuver unit, the light armored assault battalion. This battalion with its organic infantry, increased firepower and improved tactical mobility will provide additional options for the commander in both amphibious operations and subsequent operations ashore. Specific offensive missions for the light armored assault battalion include reconssaissance in force, coordinated attacks, exploitation and pursuit operations. In the defense our intent will be exploit the mobility and firepower of the LAV to disrupt, delay, and deceive the enemy.

The flexibility, mobility, and firepower inherit in the LAV will enable us to insure a more rapid build up of combat power ashore during the critical early stages of amphibious operations. In all types of combat, the ability to rapidly influence the action with LAV units enhances our tactical capabilities.



The organization of the light armored assault battalion is shown on this slide. Our plan is to form these battalions at 29 Palms, CA, Camp Lejeune, NC, and Camp Pendleton, CA with one company stationed on Okinawa.

Our acquisition objective to meet the needs of the battalions is 744 light armored vehicles. This slide shows the breakdown of that total, by variant and according to the functional use.

LIGHT ARMORED VEHICLE PROGRAM

[Vehicle requirements]

Description	Operational requirement	Other requirements	Readiness float	Maint float	Gen supt	Acquisition objective
Light assault	165	59	20	30	15	289
Assault gun	81	27	9	14	7	138
Mortar	24	7	3	4	.....	38
Antitank	45	14	6	8	2	75
Command and control	24	7	3	4	2	40
Recovery	18	7	3	3	2	33
Logistics	48	18	6	8	.....	80
Air defense	30	11	3	5	2	51
Total	435	150	53	76	30	744

Our fiscal year 1983 budget request of $89.7 million for 134 vehicles represents the seond year of procurement in our six year program. This slide shows our best estimate of the procurement funding required to attain our acquisition objective.

We plan to begin procurement following a Marine Corps System Acquisition Review Council decision in mid July 1982. Award of a multiyear fixed price contract for the light assault variant and a test contract for the other variants will follow shortly thereafter. Our goal continues to be the fielding of one company of light armored vehicles in 1983.

LIGHT ARMORED VEHICLE—PROCUREMENT PROFILE

[Dollars in millions]

	Fiscal year—						Total
	1982	1983	1984	1985	1986	1987	
Amount	36.2	89.7	84.3	85.1	123.5	50.0	468.8
Quantity	60	134	141	116	229	64	744

The Marine Corps believes that the LAV will significantly increase our combat capability. With your help, our goal may be realized. To assist me in answering your specific questions on our Light Armored Vehicle Program, I'd like to introduce the officers accompanying me today: Colonel Donald C. Bieger, the Deputy Director of Operations at Headquarters Marine Corps, Colonel Larry E. Williams, the Director of our Light Armored Vehicle Directorate at Quantico, and Major Reed T. Bolick the Tactical Mobility/Tracked Vehicle officer at Headquarters Marine Corps. Gentlemen I wish to thank this Committee for its continued support of Marine Corps programs. I am prepared to respond to your questions.

STATEMENT OF MAJ. GEN. HAROLD G. GLASGOW, U.S. MARINE CORPS, DEPUTY FOR DEVELOPMENT, DIRECTOR, DEVELOPMENT CENTER

General GLASGOW. Mr. Chairman, I am Major General Glasgow out of the Development Center.

I discussed the matter with the commandant and he wanted to emphasize the fact that he said that the best that we have might not be good enough, and a lot of people interpreted that, what he was saying was that maybe that wasn't the vehicle for the Marine Corps.

He wanted to make clear that it might be that that vehicle would cost more money than the Marine Corps could afford to pay, but as far as the Marine Corps' need for it, it still remains.

Mr. STRATTON. That is not a very enthusiastic endorsement. What you said doesn't change the impact of the general's proposal, when he wants the AV-98 he comes up and says "That is our primary requirement and we have to have it," and now we are being asked to appropriate $111 million and if that was the kind of recommendation that I got for buying a car I certainly wouldn't want to put any money into it on that basis.

General GLASGOW. His only point was that we were not going to take it and and we weren't going to goldplate anything if the vehicle didn't satisfy.

Mr. STRATTON. Which vehicle does he want?

General GLASGOW. Which vehicle, sir?

Mr. STRATTON. Yes, sir.

General GLASGOW. We have four that are presently being tested.

Mr. STRATTON. That is just the trouble. Why don't you go out and test them and come back and make a decision and then we will see

whether it is worth the money that you are asking. I think that is the way to do it.

General GLASGOW. Our problem came, sir, when we assumed the near-term pre-position mission and our equipment was placed in the Indian Ocean area. I was commanding general of the brigade at that time and I have to tell you, sir, that when we loaded the equipment we were missing an item, and that item was something to provide some firepower ashore quickly. That was the thing that drove the Marine Corps to try to accelerate an IOC, and in 1980 we started, sir, and we haven't varied.

Mr. STRATTON. That is what I am saying. You put it out there, but here it is 1982 and you haven't even made up your mind which vehicle you want.

General GLASGOW. Well, sir, we started in 1980, in December 1980, with a required operational capability and we haven't changed our position one iota.

Mr. STRATTON. You don't even have a vehicle to recommend and you have already lost 2 years. I keep reminding everybody in the great war, the last one we really won, only took 4 years. So you have half of your time already passed and you don't even know what vehicle you want.

I really feel that this is an exercise in futility and I would think that what we ought to do would be to get the vehicle chosen and then come in and see whether the House would go along with it. That would be my recommendation, actually.

General GLASGOW. The reason we haven't chosen the vehicle is that we took an essentially off-the-shelf nomination that was submitted by industry. This accelerated the development by at least 3 years, and they now are reaching the end of the test. On March 1 of this year we went into our source selection evaluation, and by July 15 one vehicle will be chosen. Should it be satisfactory and if it is cost-effective, we will receive production models a year from that date, sir.

We will field the first company in November 1983, sir.

Mr. STRATTON. Go ahead and finish your statement, there, General Molinelli. I really think that this thing needs considerable reevaluation. I wasn't convinced about this when I heard about it last year and I am less convinced right now.

General MOLINELLI. I was saying the vehicles they are looking at are the 25 millimeter on the light assault vehicle for the Marine Corps and the same vehicle called the mobile protected gun in the near term for the Army and a gun vehicle, that was the picture you saw, that will probably carry the 90-millimeter low-pressure gun called the assault gun variant for the Marine Corps. The Army is not planning on buying the assault gun variant. The recovery vehicle is to be used by both services.

There are other variants which may be produced. The light armored squad carrier [LASC] is scheduled for purchase in fiscal year 1984, unless the high-technology test bed—the 9th Infantry Division—decides that it is too heavy for the needs of the light division.

OSD views this as an important program. Our major intent is threefold.

First, that this vehicle satisfy the light force needs of both services.

Second, the unit cost must be controlled. Clearly, there is a price above which alternatives to the LAV family will be sought.

Third, that this program pursue its original goal, the purchase of an essentially off-the-shelf vehicle.

We will continue to interest ourselves in these aspects of the program, and in the eventual integration of the long-term MPGS system into the program.

At this point I would like to introduce Brigadier General Pihl who will discuss the Army's portion of the program. He will be followed by the Marine Corps' representative, Major General Glasgow.

Mr. STRATTON. Let me ask a couple of questions here. Why is this going to cost $800,000? You can even get several Mercedes for that.

General MOLINELLI. It is not our intention that vehicle cost $800,000. I believe the vehicle will come in somewhere around $300,000 with some increase for a couple of the variants, probably less than $700,000. It is a very intense competition and under the contracts that it is structured for it appears that the competition will reduce the price down to where it is affordable for both services.

Mr. STRATTON. Their figure is in the budget, Mr. Campbell advises me, of $800,000. We didn't pull this out of the air. This is what is budgeted.

General MOLINELLI. Yes, sir, I believe you will hear more on that.

Mr. STRATTON. It is that amount of money that we were going to spend for the M1 tank, and it is more than what we were going to have a unit cost for on the M1 tank and here we are with a 25-millimeter gun. I don't know what that is in hundredths of inches, but it is a pretty small gun and you are going to have it cost virtually the cost of a tank. The thing just doesn't add up.

General MOLINELLI. The program has been restructured since the budget submission.

Mr. STRATTON. Well, I don't want to interrupt anybody's presentation, and we will be glad to hear the presentations, but my own feeling is to suggest that we simply delete these funds and then when you decide on what you want, you can come back and then we will see whether it stacks up against our priorities.

My information is that on virtually every item the Marine Corps and the Army are at loggerheads, and how you are going to get one baby out of that combination is a little hard for me to understand.

General MOLINELLI. Now, Mr. Chairman, as representing the Secretary, I am here to tell you if the Marine Corps and the Army don't get together, we believe they are now, that they won't have a program. That is our charter.

Mr. STRATTON. I understand the LAV, with a 25-millimeter LAV the Army wants a stabilized turret and the Marine Corps wants a nonstabilized turret.

Let me run through these and you can answer the whole thing. If it is with a 90-millimeter gun, a bunker buster, the Marine Corps says "That is what we want", and the Army says, "It isn't what we want."

As for the antitank LAV, the Marine Corps would like to attach a TOW and the Army says, "Nothing on the TOW."

On the recovery vehicle, the Marine Corps wants it and the Army wants it, and it is the only thing you agree on.

With respect to an 81-millimeter mortar, the Army says "No", and the Marine Corps says "Yes".

The light armored squad carrier, the Marine Corps, "No", and the Army says "Yes".

How are we going to come up with a single vehicle to satisfy that anyway especially when we are going to pay 600,000 or $700,000 for each one of them at the start of the program, before we get all of the escalation and all of the change orders that come in.

General MOLINELLI. Mr. Chairman, we intend for both services to come up with a single basic vehicle.

Mr. STRATTON. But that is what you told us last year. Twelve months have elapsed and billions of dollars have gone into defense, and we are still right where we were a year ago.

General MOLINELLI. We are way down the line in the testing.

Mr. STRATTON. Is there anything incorrect that I read off of that list?

General MOLINELLI. Yes.

Mr. STRATTON. You are ready to take whatever the Army agrees to, General?

General GLASGOW. Sir, we joined in a joint program last June and I want to say, sir, that for the first time in our history we are walking arm in arm on this program.

Mr. STRATTON. This doesn't look like walking arm in arm. What is incorrect in that list that I read you?

General GLASGOW. Well, the first comment——

Mr. STRATTON. Are you willing to take whatever the Army wants?

General GLASGOW. Yes, as long as we have an opportunity to sit down as we have done.

Mr. STRATTON. And get out a change order and put something on it which will raise the price even further?

General GLASGOW. That is not the case. As long as we have an opportunity to sit down and discuss, as we have discussed before on each one of these issues, the Army and Marine Corps will come out together on this.

Mr. STRATTON. I know, but they haven't come out together, and you have had a whole year and I think the only way to really get you together is to cut up the money and then maybe that will speed things up. But I just don't think so. You say that maybe by July or something or other you can have a conceptual thing and then by September something else will come along.

Mrs. HOLT. Will the gentleman yield.

Why don't we let them testify on it? Apparently there is some agreement and maybe if he could tell us we could find out what it is.

Mr. STRATTON. I gave both witnesses an opportunity to deny this.

Mrs. HOLT. They didn't have a chance to respond.

General GLASGOW. I denied it, sir, now may we go one by one.

Mr. STRATTON. You go for a stabilized turret?

General GLASGOW. The question is that the Marine Corps had only put on ours that we desired it rather than required it.

The Army said that they required it. If it comes about, that is one of those things that won't bother the Marine Corps and we are not going to object. We didn't say it would be a nonstabilized platform.

Mr. STRATTON. You are prepared to accept the 25-millimeter instead of the 90 millimeter?

General GLASGOW. No, sir, both weapons systems are going to be on. The light assault variant, the 25-millimeter chain gun will be on the light assault one. On the assault gun, the 90 millimeter will be on——

Mr. STRATTON. We are not going to have one vehicle, we are going to have several variants?

General GLASGOW. Basically two vehicles. The variant is a term that people get hung up on. As an example we wanted to have a mortar carrier and in this mortar carrier all we are talking about is a light assault vehicle with an ammunition rack and bracket in there to hold the mortars, just a simple change in design, sir.

I have to say, sir, that with a vehicle like this if you go out running around the desert with loose mortar rounds, you stand more of a chance of killing people inside than you do out. We have to look at getting these things incorporated in the system as we build the vehicle because it will cost us less.

The variants in each case are basically that. In the air defense variant, as an example we would take a Stinger team and a radar nothing more than a bracket on the wall for a radar screen in order for our people to see where the aircraft are.

Basically we have two variants, that both the Army and Marine Corps agree on. We both desire different things to put into these, which is I think only natural, but there is no major redesign or anything of that nature in the program at all.

Mrs. HOLT. Well, which of these things that the chairman read off do you have problems with, and you are really in great disagreement on, that you can't get together? Are there any of them?

General GLASGOW. Mrs. Holt, our case is a success story. I have discussed with every individual involved including the program manager and the only thing I know of in disagreement are issues espoused by those people in industry who would prefer to talk rather than to compete and some individuals on the outside who don't believe in the light armored vehicle, that would like to drive a wedge into it, to either delay it or to stop it.

But as far as inside the Army and Marine Corps, I have to say for the first time ours is a success story. Really all we are asking for this morning is an opportunity to go through the test, just to determine whether or not we come out with a vehicle, and if we don't, then there are other steps that we would have to take, including a number of options.

Mrs. HOLT. Shall we go ahead with this presentation?

Mr. STRATTON. General, you talk about the variants, and I don't understand what you mean. It was my idea we were going to get one vehicle for both services and you are going to have variants. As I understand English, that means that that is going to be another vehicle?

General GLASGOW. That is a mistake that we made to begin with, during planning. We are not talking about any major redesign at

all. It is strictly a case for the mortar carrier we need to have an ammunition rack in there and we need to have a bracket to take care of the mortars and ammunition while it is moving. But as far as any redesign, that is still the Light Assault Vehicle with just a slight change in design.

Mr. STRATTON. You are saying the Marine Corps would accept whatever the Army agrees to accept, that you want to add an 81-millimeter gun?

General GLASGOW. That is changing it just a little bit, sir. We will accept together, and we sit down at the table no less than once every 2 weeks and we discuss these variants and we discuss the changes and the modifications.

Mr. STRATTON. I don't care about the history and I want to know what you will accept. We are running out of time and we have to get this budget out there, and I am saying, are you willing to take whatever the Army will approve except that you want to add an 81-millimeter mortar to it?

General GLASGOW. No, sir, I am willing to accept what the U.S. Army has or that the U.S. Army and U.S. Marine Corps agree together, and we are together on this program.

Mr. STRATTON. You are not together because they don't want a mortar carrier.

General GLASGOW. Well, sir——

Mr. STRATTON. Is that right, General.

General GLASGOW. That is a true statement, sir, but that doesn't mean that they are not in agreement with us having it.

Mr. STRATTON. I don't think we can sit up here and be a patsy for negotiations going on that we have nothing to do with or no control over and we are going to give you the money and you can go out and buy any damn thing you want?

General GLASGOW. Sir, that is not the case at all.

Mr. STRATTON. It is the case because once we give you the money on the basis of this testimony, we have no control over what the thing is. You have your variants and the Army has their variants, and you hope to hell we don't go over the $115 million you want.

General GLASGOW. We have different missions, just the difference between my being a marine, and General Molinelli being a soldier.

Mr. STRATTON. I think you ought to have a different vehicle, that is really what we ought to go to.

General MOLINELLI. Mr. Chairman, I must confess to you that the term "variant" has caused a number of difficulties. The intention as far as Mr. Carlucci is concerned or the Office of the Secretary of Defense is concerned is that the vehicle that is purchased by the services be one basic vehicle.

The armament on two of those vehicles: The Marines will choose the low pressure 90-millimeter gun and the 25 millimeter, and the Army will choose the 25 millimeter to be mounted on that vehicle.

The other variants that we are talking about are really changes in bracketry inside the vehicle. I would not like to address them as variants because it has caused so much confusion, and I must admit we haven't got the services to call them by another name, but it is primarily buying a vehicle and then naming it as to what it is going to do.

Mr. STRATTON. How much is this vehicle going to weigh?

General MOLINELLI. Dependent upon which vehicle is selected, it will run from probably 20,000 to 29,000 pounds.

Mr. STRATTON. Put that in tons, it is 10 tons to 12 tons?

General MOLINELLI. It is 10 tons to a maximum of 14½. There is an absolute cap of 14½ tons.

Mr. STRATTON. I understand that you don't have anything that can lift 14½ tons?

General MOLINELLI. The Marines consider the CH–53E.

Mr. STRATTON. So here we go again. We purchase a vehicle that the Marines can lift, but the Army can't lift.

General MOLINELLI. That is the reason the Army has not made the decision on the light armored squad carrier.

Mr. STRATTON. What do you propose to do against the tanks? The 25-millimeter gun, is that going to be able to knock out a tank?

General MOLINELLI. No, sir, it will not knock out a tank.

Mr. STRATTON. You are going to have it totally vulnerable to tanks, is that right?

General MOLINELLI. No, sir, the vulnerabiity of the vehicle will be reduced by its agility and mobility. The ability to attack a threat tank will be accomplished through the use of the two systems.

Mr. STRATTON. According to this you don't want the two.

General MOLINELLI. Sir, I represent the Office of the Secretary and I will let General Pihl explain where they are going to use the TOW's in the Army.

Mr. STRATTON. I am talking about what you are going to do on the LAV. The Marine Corps wants the TOW, but you want to put the TOW on something else?

General MOLINELLI. The Army's intention——

Mr. STRATTON. This thing is so fouled up. A guy like me has trouble understanding it. We are going to build another vehicle so that you can put the TOW on it, but the Marine Corps is going to put the TOW on this vehicle.

Why don't we use the higher velocity rocket? Isn't that the thing that we really ought to have on this vehicle?

General MOLINELLI. It offers great potential and it is not quite here yet, but I concur with you.

Mr. STRATTON. Neither is the vehicle here either.

General MOLINELLI. It offers great potential. The vehicles are essentially off the shelf and that offers a great deal. The Army is examining the use of the TOW on yet a lighter vehicle for the light devices. That vehicle (given that they choose it) will be deployable by the UH–60 aircraft.

Mr. STRATTON. I am too mean on the witnesses, but where do you want to start on this?

Mrs. HOLT. I thought that General Pihl was going to give us a presentation.

Mr. STRATTON. General Molinelli hasn't finished his presentation, so we had better let him finish that and then we will go to the other one, and maybe this will make some sense. I hope so.

General MOLINELLI. I will yield to General Pihl. I think that he can help explain the Army's program on the light division.

Mr. STRATTON. OK, you are recognized.

STATEMENT OF BRIG. GEN. DONALD S. PIHL, USA., DEPUTY DIRECTOR OF WEAPONS SYSTEMS OFFICE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

General PIHL. Mr. Chairman, and ladies and gentlemen, it is a pleasure to appear before you today to outline the Army's program for the light armored vehicle. I will discuss the Army's future plans for the structure of light divisions, the acknowledged materiel deficiencies in equipping the light forces and current Army plans for correcting those deficiencies as related to light armored vehicles.

ARMY FORCE STRUCTURE

[Present—1986 timeframe]

	Active	Reserve
Armored divisions	4	2
Mechanized divisions	7	1
Airborne division (82d Div.)	1	0
Infantry divisions (7th ID, 9th ID, 25th ID)	3	5
Air assault division (101st Div.)	1	0
Totals	16	8

The Army currently has a 24-division force. Because the size of our Army is constrained, and the contingencies for which we must be prepared are varied, the Army must be sufficiently flexible to respond to various threats. These threats encompass both NATO and non-NATO environments. We believe that a flexible response dictates a mixture of heavy and light forces. Within the current Army force structure there are five Active designated light divisions. As shown on this slide, those divisions are the 82d ABN, 7th ID, 9th ID, 25th ID, and the 101st Air Assault Division.

ARMY HIGH TECHNOLGOY TEST BED (HTTB) DIVISION MISSION/OBJECTIVE

Using the standard infantry division 86 study effort as a guide, activities at Fort Lewis will evolve a light division designed for rapid deployment, sustainability, and exploitation of technological opportunities, to yield a lean hard hitting force. The objective is to develop through innovation and technology, a division approaching the combat capability of a heavy division, while retaining the airlift requirements and sustainability inherent to light divisions. (Extract from fiscal year 1982 Army Posture Statement.)

The Army is planning to change its light divisions. The Light Division 86 study was used to conceptualize new Army requirements. We are currently conducting an empirical analysis. To provide that analysis, the Army has designated the 9th Infantry Division as the Army's High Technology Test Bed Division. The 9th ID Commander, Major General Elton, in concert with the Army's Training and Doctrine Command [Tradoc] and the Materiel Development Readiness Command (Darcom) is specifically charged with the mission to:

Compare and validate various division organizational structures.

Investigate various equipment mixes.

Explore the infusion of high technology.

Tests and evaluate operational concepts.

The test being conducted within the division relate to the Rapid Deployment Force and various equipment options—lightly armored vehicles being only one such option. The test plan covers a broad spectrum of objectives to include analyses of command and control, intelligence production, battlefield surveillance, target acquisition, and electronic warfare.

The Army's objectives for the high technology test bed program are to field a prototype High Technology Light Division [HTLD] in fiscal year 1985 and incrementally transition the other light divisions to the HTLD configuration. HTTB testing began in May 1981 and will continue through fiscal year 1988.

Prior to completion of tests in the HTTB, the Army readily acknowledges that our light divisions and other selected units are deficient in weapons systems that provide for rapid strategic deployment, high tactical mobility, reasonable survivability, and assault capability on the integrated battlefield.

The Marine Corps acknowledges similar deficiencies for its light forces. In view of potential world crisis, both the Army and the Marine Corps agree that we must correct these deficiencies on an urgent basis. The Department of Defense acknowledges our needs and has approved mission element need statements [MENS] for both services. Those documents serve as the basis for the joint light armored vehicle program that we are currently and successfully executing.

The Army has acquisition responsibility for the LAV program in compliance with Department of Defense and congressional guidance. The program manager is a Marine Corps officer, Colonel Joseph O'Brien, who is with us today. The Army has provided an assistant program manager, a contracting officer, experienced engineer and procurement personnel and offices at the Tank-Automotive Command Headquarters in Warren, Mich.

The testing of candidate vehicles is a joint effort. The Army has provided personnel from the operational test and evaluation agency [OTEA] and Army crewmen to work with marines at 29 Palms, Calif., and Yuma Proving Grounds, Ariz. The LAV program requires the competitive selection and procurement of an "essentially" off-the-shelf armored combat vehicle.

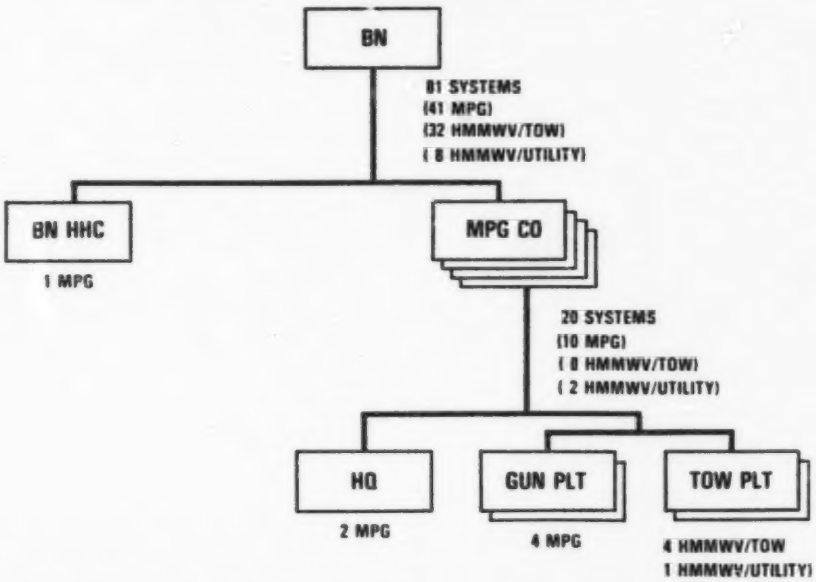
The competitive testing of four candidate LAV's began on November 1, 1981, is proceeding well and is on schedule. Tests will be completed on May 31, 1982. And we will jointly select a winning contractor based on test results and contractor responses to the LAV production Request for Proposal [RFP] which was released on December 2, 1981. The Army is dedicated to the successful completion of this program and we are confident that it can fulfill the stated urgent requirements of both services.

At this point I would like to address Army requirements for light armored vehicles. As I have already testified, the Army is relying on the 9th ID to help determine requirements for specific equipments. However, in advance of their completed analysis and because the requirement is urgent, the Army has identified the need for a lightweight, assault capable, armored combat vehicle. The LAV program is currently testing several candidate vehicles with a

two-man turret and the Bushmaster cannon that have the potential for fulfilling this requirement in the near term.

It is currently proposed that the light divisions be organized with two mobile protected gun battalions each. A type MPG battalion is as shown on this slide.

MOBILE PROTECTED GUN (MPG)
NEAR-TERM ORGANIZATION



You will note that each battalion will contain 41 mobile protected gun systems. Also shown are 32 high mobility multipurpose wheeled vehicles with the TOW missile. The HMMWV with TOW comprises the second half of the Army's MPG solution. TOW will give the light divisions a viable capability against threat main battle tanks. For this hearing I am concentrating primarily on what the Army plans to procure from the LAV program.

The Army's total procurement of MPG's is 680 systems over a 4-year period. The total buy will equip four Army divisions and include sufficient systems for maintenance floats, war reserve, training base, and two POMCUS sets, one each for the 7th ID and 25th ID.

The Army also acknowledges a need for other light armored vehicles for the light divisions. Last year Major General Maloney testified before this committee that the Army had a potential requirement for 1,500 light armored squad carriers [LASC]. The Army still anticipates procuring LASC's in order to give mobility to several of the eight infantry battalions in each light division. The quantity required may still be approximately 1,500. However, before the Army makes a decision on the specific vehicle to fulfill the squad carrier requirement we must allow the high technology test bed to

explore operational and organizational concept testing for using such vehicles.

Their input to the decisionmaking process is critical. We will also give further consideration to the use of systems or variants of systems already in the Army inventory. The established maintenance and logistics base demands a review of fielded systems as to their potential for filling the LASC role. This will be done.

The merits of fielding a family of vehicles has always been recognized by the Army. In this regard, we are keeping our options open to select a LASC variant from the current LAV program.

The Army will consider the various options available and make a decision on other variants to include a recovery vehicle variant in June of this year. We realize that the decision point is critical because a winning contractor from the LAV competition will be selected by July 1982. We anticipate award of a multiyear, fixed-price production contract after a Marine Corps Systems Acquisition Review [MSARC] and an Army production decision program review.

My last slide shows the Army's procurement program for light armored vehicles.

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U.S. ARMY'S LIGHT ARMORED VEHICLE PROGRAMS

[Procurement dollars in millions]

Item	Fiscal year—												Total	
	1982		1983		1984		1985		1986		1987		1988			
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
LASC					173	$65.3	173	$62.9	299	$112.5	520	$204.3	287	$118.0	1,452	$563.0
MPG-N			175	$111.3	200	136.0	240	156.8	65	44.0					680	448.1
LARV					51	18.6	35	12.3	44	16.1	53	20.2			183	67.2
Total Army			175	111.3	424	219.9	448	232.0	408	172.6	573	224.5	287	118.0	2,315	1,078.3

General PIHL. Our fiscal year 1983 budget request is for $111.3 million to procure 175 mobile protected gun systems (with the 25-millimeter Bushmaster cannon). We plan to procure 680 systems over a 4-year period at a total cost of $448.1 million. This is a change to the Army LAV data as reflected in the President's fiscal year 1983 budget. The fiscal year 1983 dollar figure remains constant at $111.3 million.

The Army has opted to procure only quantities of MPG systems to fully equip one light division (9th ID), provide a war reserve and provide systems for the training base. I have spoken briefly to other potential LAV variants for which the Army anticipates a need—a light armored squad carrier and a light armored recovery vehicle.

This chart projects the Army's quantitative and dollar requirements to procure those variants starting in fiscal year 1984. I must reemphasize the fact that the Army realizes that a multiyear procurement contract for July 1982 is pending. Therefore, an Army decision on the other variants will be made in June this year.

The chart reflects those quantities of vehicles required to provide each light division (except the 82d ABN Div.) with two MPG battalions, squad carriers for five of its eight infantry battalions and sufficient recovery vehicles to support the MPG's and squad carriers. Quantities also include maintenance floats, war reserves, POMCUS sets (two) and training base support.

We are confident that the joint program is responsive to meeting the Army's urgent requirement for fielding a near-term LAV system. We need the flexibility to pursue alternatives. The High Technology Test Bed Division tests are critical in defining those alternatives.

In order to answer some of your specific questions on the Army's LAV program or our far-term developmental program, I would like to introduce those assisting me today: Colonel James Davis from the Office of the Deputy Chief of Staff for Operations who can address Army requirements. Colonel Joseph O'Brien is the joint program manager for the light armored vehicle [LAV] program.

I realize that these hearings primarily address the procurement aspects of the near-term LAV program; however, I have also brought Colonel James Welsh from the Tank-Automotive Command who is the project manager designate for the joint far-term developmental program, mobile protected gun system.

Gentlemen, we respectfully request your support in funding our LAV program.

Mr. STRATTON. Could you cut that a little bit because we are going to have to quit at 12:30, and I don't know when we are going to be able to get back to this.

General PIHL. Let me put up my last chart, if I may.

Shown here is the Army's procurement request in 1983, with $111 million.

Mr. STRATTON. Where does that tie in with the LAV? Is this another vehicle?

General PIHL. That is the LAV program. The LAV program is a title which this vehicle with the millimeter Bushmaster is called the mobile protected gun near term. The terms are synonymous.

Mr. WHITE. That is not what is reflected in the budget request.

General PIHL. The Army on the 2d of February opted not to make a decision on the light armored squad carrier or the recovery vehicle, until the 9th Infantry Division reported out on the results of their evaluations this spring. So at this point in time we restructured the program and moved the gun, the 25 millimeter Bushmaster, up in time to have one common program with the U.S. Marine Corps.

Mr. STRATTON. Is there money in here for the mobile protective gun?

Mr. WHITE. The Army calls it the mobile protected gun.

Mr. STRATTON. Do we have any other money in for something else under that title.

Mr. MAVROULES. We had the line items, so the present operative request does not agree with the budget.

Mr. STRATTON. This implies a mobile protected gun far term?

General PIHL. That is a replacement for the 25 millimeter near term protected gun, once we perfect the 75-millimeter gun technology. It would not be procured until the first day in fiscal year 1988, and at that time we would have a decision to be made on how to redistribute the light gun in the mobile protected gun battalions.

We are going to bring two battalions of these guns into each of our light divisions, the five that I have shown you with the exception of the 82d Airborne Division, where that number would be one battalion. We have choices to make at that time, what to do with the near term vehicle.

Mr. STRATTON. Go ahead.

General PIHL. Those choices would be what to do with the military police requirement in terms of up-arming them in our light divisions or distribution to the Reserves and National Guard.

At this point I should turn it over to General Glasgow of the Marine Corps.

Mr. STRATTON. I thought you were going to tell us what the Army wants. I haven't heard anything so far as to what your requirement was and what your environment is. I would like you to address all of these points here that the staff has indicated you are at loggerheads with the Marine Corps.

General PIHL. I thought we were still trying to complete the opening statement.

Mr. STRATTON. We don't want any puffed stuff. We want to try to get down to what it is that we are dealing with, and I would like to find out. Everybody says "We are having great discussions and we are going to resolve this", but it hasn't been resolved over the last 12 months and I would like to find out what it is that the Army wants and why it wants it, and if you can do that in 5 minutes, that is fine.

General PIHL. We are looking for an assault gun capability for our light divisions to be used in a lodgement scenario in a Southwest Asian contingency. If we are to deploy and have forces in the light divisions that do not have a gun capability at this time that they can strategically or tactically deploy, we have an urgent need to fill in those divisions with that type of capability.

We have selected the 25-millimeter gun candidate because it is essentially off the shelf, available technology that we could put on a vehicle in a short period of time. That is a 680 vehicle program

over 4 years. It would start with 175 vehicles requested for $111 million in fiscal year 1983.

Mr. STRATTON. Just a second. All you say is that it has to be used in Southwestern Asia. I don't know, I have never gone ashore in Southwest Asia, I don't think.

What is there about Southwest Asia that is different, let us say, from Southeast Asia, and what specific conditions is it that requires a 25-millimeter gun? What do you propose to encounter there?

General PIHL. When the Army did an analysis of its capability to project forces and looked at the heavy-light mission as far as our divisions were concerned, we were concerned about our abilities to influence the U.S. interests as far as Southwest Asia, specifically Iran, was concerned. At that period of time we looked at what was inside the light division in terms of an assault capability, if they were landed somewhere in that continent in order to establish a——

Mr. STRATTON. You are talking about an amphibious operation now?

General PIHL. I am talking about an air-landed operation. The Marines would handle the amphibious part.

Mr. STRATTON. Why is a 25-millimeter gun better than a 75-millimeter gun?

General PIHL. A 25 millimeter is not better, but a 25-millimeter Bushmaster is in development and we have one that we can put on this vehicle.

Mr. STRATTON. What does the Bushmaster do, and I don't know anything about it. I have heard the name and why is it better for Southwest Asia than a 75-millimeter gun which I would think would be great.

As a matter of fact we have had a proposal that instead of going to 120-millimeter guns on the M1 we ought to go down to a 75 millimeter. I assume that the idea of going into Southwest Asia is to confront the enemy, and I would assume that if you are going to confront the enemy you would like to shoot as many of them as possible?

General PIHL. Yes, Mr. Chairman.

Mr. STRATTON. So why is it that you get a small gun rather than a large gun ?

Mrs. HOLT. Will the gentleman yield?

I just want to add to it, is the 75 millimeter available?

General PIHL. It is not available at this time. It would need to be developed. The Ares version of that gun was a prototype demonstrator of a 75-millimeter gun.

Mr. STRATTON. I am sure that Watervliet Arsenal could turn those out for you at a very rapid speed, if that is what you wanted.

General PIHL. I am not sure of that because what is envisioned in that gun is advanced fire control that we do not have at this time and an automatic loader with rapid or burst five capability.

Mr. STRATTON. You want to buy it from the Belgians?

General PIHL. I didn't say that, an automatic loader and a gun that fires rapidly with point accuracy, and that gun has not yet been developed.

Mr. STRATTON. So we go to a 25 millimeter?

General PIHL. In terms of what is essentially available off the shelf.

Mr. STRATTON. You don't have a 90 millimeter that is available? That is what the Marine Corps wants. Why don't you take that?

General PIHL. I think in terms of drawing out the requirements I would have shown you a battalion that shows the mix in our mobile protected gun battalions in a light division.

Would you put up that chart, please?

You will see the gun platoon and the TOW platoon at the bottom. You have questioned why there is a difference between the Marines and the Army on the TOW. Our version of the mobile protected gun battalion for the initial 4 years, between now and the time that we field this in the 9th Division, we would have the TOW on the high mobility multipurposed wheeled vehicle [HMMWV] in a mix with the mobile protected gun. That would give us the HMMWV vehicle, providing overwatch to the mobile protected gun.

At the time we are able to field the 75 millimeter in our far term program, that vehicle would replace both capabilities within the division, once we have proven its antitank capability.

Mr. STRATTON. Proven, which is that?

General PIHL. The 75, sir, the question is, the HMMWV TOW, the wire-guided missile system is the 3,000 meter capability.

Mr. STRATTON. That is an improved jeep, is that correct?

General PIHL. Yes, that would be given to these battalions in a mix with the LAV, the mobile protected gun near term 25-millimeter cannon.

Mr. STRATTON. What are you going to put the 75 millimeter on?

General PIHL. We would put the 75 on a vehicle to be developed, either wheeled or track that would be something like the mobile protected gun near term. Once the 75 was perfected that would take the place of both.

Mr. STRATTON. So we are going to have three different vehicles, and three different assembly lines for three different guns and you are trying to condense this thing and get it so that you have both your logistics simplified. It looks to me like this is going to be a nightmare.

General PIHL. The difference would be between 1983 and 1988. The third of the three you mentioned is not until a field program of 1988, the far term.

Mr. WHITE. Essentially what you are saying is that from the Army's point of view, two weapons systems are required, a HMMWV with a TOW which is the tank killer in this light battalion, and the LAV or MPG with a 25 millimeter, which handles all other threat weapons systems below a tank and also is an infantry fire suppressive weapon?

General PIHL. That is correct.

Mr. WHITE. And the problem before the committee is that the Marines go into the same environment and find that they need a 90 millimeter cannon, a low pressure cannon which is essentially not a tank killer, as opposed to the Army relying on a TOW to do that and also that they want to put a TOW on one of these $600,000 or $700,000 vehicles as opposed to a $25,000 vehicle, and then you say you don't have to put it on there.

Apparently the HMMWV can keep up adequately as a TOW in the Army, but not in the Marine Corps. That is confusing to the committee.

General PIHL. I understand, Mr. White. I am speaking to the timeframe in which we would have that vehicle, and we recognize this is an interim solution to an urgent need and we are not saying that that is the ultimate solution to the problem.

Mr. WHITE. Simply the question is the Marines and the Army are structuring this program to go into the same environment, essentially Southwest Asia that you described, and how they get there, whether it is amphibious or airlift it is different, and you fight against the same kind of threat weapons systems and come up with different requirements to do the job?

General PIHL. I think that I should perhaps allow General Glasgow to discuss the requirement for the Marine Corps and why they have a force mix that is different from the Army. I think to set those up, we agree with them or they agree with us, is a question of how we do our job when we go ashore.

The division base concept in an Army division in terms of where the fire power comes from and how a division commander organizes for combat is much different than how the USMC landing force is organized.

Mr. STRATTON. I am not trying to give you a bad time. I think that this thing demonstrates more clearly than anything that I have seen before exactly what our problem is in this country. It is that we spend months or years agonizing over exactly what we are going to do. We have all kinds of separate directions in which to go, and we act as though there is no particular urgency.

The Russians are not going to wait until we decide whether it is going to be the HMMWV and the TOW, or the 90 millimeter or the 75 millimeter. The Soviets instead of going through that agonizing thing, they seem to be able to produce them one after another. They produce three or four different classes of submarines while we put out one or two models of the thing that was developed 5 or 6 years ago.

To me, for us to sit here and put out money for a vehicle that is subjected to all of this agonizing discussion, I think is just throwing money down a rathole. If there is any way that I can make the Army and the Marine Corps understand that we can't sit here forever and expect to stave off the Russians with theoretical discussions and all kinds of arguments, I am going to try to do it.

It seems to me that the simplest way is simply to say when you decide on what you want we are going to give you the money, but we are not going to fund about six different guns going on vehicles going in different directions.

General, we only have about 5 more minutes, but why don't you present the Marine Corps' position?

General GLASGOW. Sir, if I may, allow me to just respond to the question of going into the same area, sir.

Our business in the Marine Corps is involved with advanced naval bases, either seizing or defending, and promontories within 50 miles or so of the water. Strictly it is amphibious operations, and the Marine Corps I hope of the future is going to be exactly that.

Here, sir, our problem is we don't have anything. We don't have the infantry fighting vehicle and we have absolutely nothing close to a 25-millimeter Bushmaster. Our drive for the vehicle, sir, is to have one that is helicopter transportable that we can put ashore with our guys wherever they are for the first 6 hours or so.

Until we can get something in there that can then, in the form of armor that can support them.

Mr. STRATTON. You figure a 90 millimeter is a lot better than a 25, is that right?

General GLASGOW. The only reason the 90 millimeter is involved now is that it is the only assault gun that is available. As soon as the 75 millimeter is available and is ready it will go on our light armored vehicles and then it will give us some capability of penetrating armor. But our drive, sir, is just to get something now that we can transport with a helicopter that will help us in the first 6 hours.

We don't intend to go across any beaches necessarily that are heavily defended and hopefully we are going to be able to land in places that are not too heavily defended, and at least be able to stay there for a short period of time. But without some type of protection from armor we can't make it, sir. That is the whole drive behind it on the Marine Corps' side.

Mr. STRATTON. Which is your protection from armor?

General GLASGOW. The light armored vehicle, if we can take in four to six vehicles immediately, we have at least an area that can be secured for helicopter landings so that we can bring in troops in behind it and have some protection for them, sir.

Without that, if we land helicopters or anything else in initial landings we stand a chance of losing the whole lot.

Mr. STRATTON. You want to put the TOW on the LAV, too?

General GLASGOW. We hope to be able to put the TOW on there, sir, simply because today the only thing we have as a TOW carrier is an M151 jeep.

Mr. STRATTON. Can you put the 90 millimeter on the LAV and the TOW at the same time and still get it lifted by your helicopter?

General GLASGOW. We wouldn't have the TOW on the vehicle with a 90 millimeter on it. With a 90 millimeter as an assault gun we only have that system, and it would weigh less than 14½ tons.

Mr. STRATTON. Some of them are going to have 90 millimeters and some the TOW's?

General GLASGOW. Yes, there are two variants. The assault gun will have the 90 millimeter.

Mr. STRATTON. That is something else. We don't have that in here now.

General GLASGOW. And the light assault variant will have a 25 millimeter.

Mr. STRATTON. The 90 millimeter is the assault gun then? That is what I say, some of them are going to have one gun and some of them are going to have the TOW?

General GLASGOW. We will have an assault gun platoon in each of our weapons companies in the light assault armored battalion.

Mr. STRATTON. So if the one with the TOW on is on the wrong side of the beach when the Soviet tank comes, you are going to have some problems, is that right?

General GLASGOW. Sir, as you know better than any man I know, the Marine Corps is not going tank hunting. We are going to try———

Mr. STRATTON. We don't go hunting for anything, but you don't know what is going to be on the other side of the dunes.

General GLASGOW. Hopefully by the time we have landed and have our initial forces ashore, we will have forces that will have the TOW on the 151 jeep inside, until we can get a variant with a TOW on it, sir. We are not anticipating that until 1985.

Mr. STRATTON. I hope Brezhnev doesn't mind waiting until 1985, but he starts looking a little bit more belligerent every day when I pick up the papers.

We have to come back at 2 o'clock so I think it is important that we should adjourn at this point.

Mrs. Holt, do you have any questions?

Mrs. HOLT. No.

Mr. STRATTON. Mr. Campbell or Mr. White?

If not, thank you very much, and we will try to get this thing straightened out before we have another hearing.

We will stand adjourned until 2 o'clock this afternoon.

[Whereupon, at 12:30 p.m., the subcommittee recessed, to reconvene at 2 p.m., the same day.]

AFTERNOON SESSION

THE PERSHING II MISSILE SYSTEM

The subcommittee met at 2 p.m., pursuant to notice, in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton, chairman of the subcommittee, presiding.

Mr. STRATTON. The subcommittee will come to order.

This afternoon the subcommittee will inquire into the Pershing II missile system for the Army. By way of background, Pershing II is an improved, longer range and more effective nuclear missile system than the Pershing I. Also, the Pershing II and the ground launched cruise missile are two systems covered by an agreement between the United States and our NATO allies to modernize intermediate range nuclear forces in Europe. It is the system that has also gotten the attention of Mr. Brezhnev.

The United States and NATO have agreed to an initial operating capability in December of 1983. This initial operating capability, however, is a far cry from full operational capability. Only full operational capability will provide needed offsets to Soviet intermediate range missiles such as the SS-20.

The General Accounting Office has recommended that production be delayed, because the program has had a high degree of concurrency between research and development and procurement. Fiscal year 1982 was the first year of low rate production. The request for fiscal year 1983 is for $498.3 million, which will buy 91 missiles, associated hardware and software for targeting and launching, and certain nonrecurring costs to tool up for higher rate of production. An additional $10.3 million is requested for initial spares.

In view of the recommendations of the GAO to slow the production of the Pershing II, I have asked Dr. Richard Wagner, the Assistant to the Secretary of Defense for Atomic Energy to testify on the urgency of achieving a full operational capability for this system as scheduled. I have also requested testimony from Maj. Gen. James P. Maloney and Col. William Fiorentino, the project manager, to give us an insight on the procurement and technical aspects of the Pershing II program. Specifically, I think that we should try to find out whether the technical risks pointed out by the General Accounting Office should be allowed to stretch out the program, or whether those technical risks are overshadowed by NATO and Warsaw Pact political implications along with the additional costs associated with stretching out the program. Since this program may come under attack on the House floor, and probably will come under attack, since Mr. Brezhnev has made an attack on it, I believe that we should have the information—and as much of it in unclassified form as possible—to enable us to defend the program.

Another controversy has arisen since the hearings began earlier this year. This involves the warhead selected by the Department of Defense for the MX missile. The Secretary of Defense has selected a new warhead and reentry vehicle known generally as the advanced ballistic reentry vehicle (ABRV) for that purpose. Some members are urging that the Mark 12A reentry vehicle and war-

head, now being placed on about two-thirds of the Minuteman III missiles, also be used for the MX. As a matter of fact, I think that is not a bad idea, myself.

Proponents for the Mark 12A are alleging that the ABRV will cost considerably more than the Mark 12A reentry vehicle and that the effectiveness of the two systems will be about the same. This controversy appears to be contractor generated. For this reason, I will ask Dr. Wagner to address this problem today as a noncontractor and see what his position is. I think it is incumbent on us to consider what is best for our strategic forces and the costs of alternatives to both the Department of Defense and the Department of Energy before we decide this issue. If we can get something for less money which has exactly the same capability, that is not a bad bargain.

So, with that statement you may proceed as you wish, Dr. Wagner, and after you have addressed the Pershing II issue I would ask that you also address the ABRV and Mark 12A issue.

At such time as you are getting into classified material, if you will let us know we will then close the session, under authority previously granted.

Before you speak I would like to recognize Mrs. Holt for any comments she might wish to make.

Mrs. HOLT. I think you have certainly summarized the issues that we should be considering today. It is no secret that our theater nuclear forces deployed in NATO are old and are declining in effectiveness as a deterrent. With this decline in effectiveness the Soviets have not only gained in conventional strength but now have an overwhelming superiority in European nuclear forces. I do not believe that we will be able to negotiate a satisfactory agreement to limit European intermediate range nuclear weapons if we continue to deal with the Russians from a status of inferiority.

We must show some resolve somewhere along the line. I believe that this resolve must begin with the deployment of the Pershing II and the ground launched cruise missile as far as NATO forces go and that we must also show resolve in the modernization of our strategic forces. I believe that stretching out programs such as the Pershing II will send absolutely the wrong signals to the Soviets and that we will save no money in the end. In fact, it will cost us more money in the end.

As the chairman has said, I hope that as much of the testimony here today as possible will be declassified so that we can make use of it on the floor. It does us no good to listen to convincing classified information when we cannot use it on the floor to defend vital programs. It is very important that we are able to tell this story to the rest of the people.

Thank you, Mr. Chairman.

Mr. STRATTON. Dr. Wagner, will you proceed.

STATEMENT OF DR. RICHARD WAGNER, ASSISTANT TO THE SECRETARY OF DEFENSE FOR ATOMIC ENERGY, DEPARTMENT OF DEFENSE

Dr. WAGNER. Thank you.

I am very pleased to be here for the first time before this committee to talk about this subject. Both the subjects we mention are of extreme importance.

I would like to begin by reviewing for you the background of NATO's decision to deploy long-range theater nuclear systems—Pershing II and ground launched cruise missiles—and the importance of meeting our commitment to the alliance to proceed with these deployments on schedule.

In the mid-1970's the Soviets began to deploy their SS-20 missiles and their Backfire bombers. Those deployments came on top of an earlier and continuing deployment of shorter range tactical ballistic missiles that posed themselves a substantial threat to the NATO forces in Europe.

In addition to the SS-20 and the Backfire threats, we are now seeing a modernization program for the shorter range missiles which themselves are a substantial factor in this equation of deterrence between the two sides. But it was the SS-20 in particular that first caught the attention of the Europeans.

In 1979 Chancellor Schmidt, of the Federal Republic of Germany, raised the issue with NATO as to a proper response. At that time I believe that the issue was more nearly a military issue. However, in the ensuing debate within the NATO countries it took on a much more symbolic and political cast, and at this time I believe it has essentially equal significance militarily and politically as an indication of the coherence of the Alliance.

One of the most fundamental things having to do with the Alliance is the nuclear "glue" that in some way holds the Alliance together. This issue is a very important part of that.

After much debate in December of 1979 the NATO Defense Ministers and Ministers of Foreign Affairs decided to commit to deployment of 108 Pershing II ballistic missiles and 454 ground launched cruise missiles in the United Kingdom, Federal Republic of Germany, Italy, Belgium, and The Netherlands. As you know, the 108 Pershing II missiles will replace the Pershing IA's currently deployed with U.S. forces in Germany on a one-for-one basis.

As an integral part of this December 1979 decision, the Ministers also agreed to pursue U.S.-Soviet Arms Control negotiations involving these TNF systems. We are currently implementing both tracks of the 1979 decision. We are developing Pershing II and GLCM to meet the Alliance's scheduled initial operational capability [IOC] dates at the end of 1983, and we have initiated the Intermediate Nuclear Force [INF] negotiations with the Soviet Union in Geneva.

The decision to deploy Pershing II and GLCM was a milestone in NATO's 30-year history. It typified what the Alliance is all about. In response to major Soviet initiatives in deployment of the SS-20 and modernization of other nuclear systems facing NATO—initiatives which threatened the security of the Alliance and which endangered the credibility of the linkage between European-based nu-

clear forces and the U.S. strategic deterrent—NATO took decisive action to counter that buildup.

This decision was of central importance as a symbol of the political determination and cohesion of the Alliance, in that our NATO allies have agreed to host U.S. missile units which place the Soviet homeland at risk—even though (or perhaps, because) these allies are currently under the threat of Soviet SS-20 mobile missiles which can completely cover the European landmass from bases in the U.S.S.R.

The SS-20 and other long-range TNF systems currently deployed give the Warsaw Pact an overwhelming advantage in long-range TNF capability (greater than 1,500 kilometers range). The pact has about 285 SS-20 and 300 SS-4 and SS-5 launchers, giving them about 1,150 long-range warheads on launchers, in that the SS-20 is a MIRV'd system with each missile carrying 3 warheads. NATO has no comparable capability today, and will have only 572 warheads—about half as many—when deployment of Pershing II and GLCM is complete.

The Warsaw Pact advantage in air-delivered bombs capable of being delivered at long range is equally disturbing. Our entire long-range TNF capability now in NATO is limited to 156 F-111 aircraft—capable of striking targets only on the western fringe of the Soviet Union, and less survivable and less likely to penetrate Soviet air defenses than Pershing II and GLCM.

I would like to add a point at this time—that another important factor in the deterrence equation should be the survivability of our forces. At the present time the United States and NATO theater forces in Europe are less survivable than they must be to avoid giving the Soviets tempting targets in a crisis.

I think it is not simply a matter of a warhead count between one side and the other to give an indication of the relative deterrent postures, but also whether or not our forces are vulnerable to a surprise or near-surprise strike.

At the present time our forces are concentrated in a small number of locations. A surprise strike would significantly reduce the forces we have to respond to it. This situation is I believe essentially identical to the survivability concerns that we have for our strategic forces. I think it has very similar implications for crisis stability and overall deterrence.

The Pershing II and GLCM deployments will substantially improve the survivability of our theater forces. The high accuracy [deleted] of these systems allow us to strike hard targets, while also limiting collateral damage. They will do much to redress the significant imbalance in nuclear capability which now exists between the Warsaw Pact and NATO.

Deploying a mixed force of ballistic and cruise missiles hedges against the unexpected neutralization of either system, provides us a great deal of flexibility and greatly complicates enemy planning.

Pershing II has a high assurance of penetrating Soviet defenses, allows us to reach critical targets quickly, and takes advantage of the existing Pershing IA structure. GLCM's longer range allows attack of deeper targets, although its longer flight time inhibits use against time-sensitive targets.

Taken together, Pershing II and GLCM offers a credible capability for NATO to execute a wide variety of military options. We feel that NATO's modernization program accomplishes two important goals: First, it allows us to make militarily significant strikes which the Soviet leadership cannot ignore; and second, it provides an incentive for the Soviets to take part in serious arms control negotiations.

Without question, the Soviets place the highest priority on preventing the deployment of Pershing II and GLCM next year, because they realize that these systems greatly increase NATO's deterrent capabilities, and because they represent an act of political cohesion on the part of the Alliance. Consequently, we and our NATO allies regard deployment of Pershing II and GLCM as our highest priority in theater nuclear modernization. The Governments of Great Britain, Germany, and Italy realize the importance of these programs, and remain steadfast in their commitments to deploy Pershing II and GLCM on schedule.

We have worked hard with our allies to implement the decision and, although there have been some problems, we are proceeding well with system and warhead development, and with site preparations in Europe. The United States has a great deal at stake in its commitment to meet the Alliance's December 1983 IOC.

The site preparations in Europe are of course the acid test of the cohesion behind the decision. Once we meet the IOC's, we still face a difficult challenge, and that is to complete the full range of long range TNF deployments on schedule.

I think it is the IOC's which together bear on the political cohesion of the Alliance. I think in some ways it might be the final capability that will deter the Soviets and bring them to the bargaining table as well.

The first few missiles will not do that, achieving the full deployment will. The benefits of achieving the FOC are very important, I believe.

From a cost standpoint, there are serious penalties associated with stretching out the Pershing procurement schedule. Equally important, if the United States were to make any change in deployment schedules at this juncture, we would be sending the wrong signals to the Soviet Union. Delaying Pershing deployments would be seen by the Soviets as the beginning of U.S. backsliding on the program and indicate to them that their political and propaganda efforts in Europe are paying off.

Maintaining the Alliance's plans for Pershing deployment demonstrates the continued U.S. commitment and shows NATO's resolve to fully implement the 1979 Ministerial decision. In addition, it provides SACEUR with enhanced military effectiveness and the capability to deter a Soviet attack on NATO by holding targets in the Soviet Union at risk.

Any decision to stretch out Pershing II or GLCM would also undermine our negotiating position at Geneva. Our best guarantee that the Soviets will negotiate seriously is to proceed with the Pershing II and GLCM programs as planned.

In summary, by continuing with our deployment schedule, we not only provide SACEUR the weapons necessary for deterrence

should the INF negotiations fail, but we also provide the necessary incentive for the Soviets to bargain.

Mr. Chairman, the Pershing II program is a crucial link in NATO's nuclear force modernization efforts. It must be maintained on schedule to allow us to fully implement the historic 1979 Ministerial decision. In so doing, we will greatly enhance our capability to deter war, and to be able to terminate any war which may begin on terms favorable to the free world.

This concludes my statement. General Maloney is now prepared to address the fiscal year 1983 Pershing II budget request and procurement objectives, and Colonel Fiorentino will give you a review of the status of the Pershing II program. I would be pleased to answer any questions you may have, or, if you prefer, we can defer questions until my colleagues have testified.

Let me simply go through the key issues. The production cost increase, and the concomitant breach of the Nunn amendment are clear issues. There is the first flight and the concurrency between the development program and production program.

I should say with regard to the concurrency issue that the details of the development program and the risk entailed in that program have been thoroughly reviewed by the Under Secretary of Defense for Research and Engineering, Dr. DeLauer. We in USDRE believe that the risk, while certainly not negligible, is worth taking in order to keep these systems on schedule.

Unless there are questions for me, sir, I will turn the floor over to General Maloney.

WRITTEN STATEMENT OF DR. RICHARD L. WAGNER

Mr. Chairman and Members of the Committee: I am very pleased to appear for the first time before this subcommittee to discuss Pershing II and its integral role in NATO's Nuclear Force Modernization programs. With me today are Major General Jim Maloney, Director of Weapons Systems for the Army, and Colonel Bill Fiorentino, the Army's Pershing II Project Manager.

I would like to begin by reviewing for you the background of NATO's decision to deploy Long Range Theater Nuclear Systems—Pershing II and ground launched cruise missile—and the importance of meeting our commitment to the alliance to proceed with these deployments on schedule.

In December 1979, after two years of intensive analysis and consultation, the NATO Defense Ministers and Ministers of Foreign Affairs decided to deploy 108 Pershing II Ballistic Missiles and 464 Ground Launched Cruise Missiles in the United Kingdom, Federal Republic of Germany, Italy, Belgium, and the Netherlands. As you know, the 108 Pershing II Missiles will replace the Pershing IA's currently deployed with U.S. forces in Germany on a one-for-one basis.

As an integral part of this December 1979 decision, the ministers also agreed to pursue U.S.-Soviet arms control negotiations involving these TNF systems. We are currently implementing both tracks of the 1979 decision. We are developing Pershing II and GLCM to meet the alliance's scheduled initial operational capability (IOC) dates at the end of 1983, and we have initiated the Intermediate Nuclear Force (INF) negotiations with the Soviet Union in Geneva.

The decision to deploy Pershing II and GLCM was a milestone in NATO's thirty year history. It typified what the alliance is all about. In response to major Soviet initiatives in deployment of the SS-20 and modernization of other nuclear systems facing NATO—initiatives which threatened the security of the alliance and which endangered the credibility of the linkage between European-based nuclear forces and the U.S. strategic deterrent—NATO took decisive action to counter that buildup.

This decision was of central importance as a symbol of the political determination and cohesion of the alliance, in that our NATO allies have agreed to host U.S. missile units which place the Soviet homeland at risk—even though (or perhaps, be-

cause) these allies are currently under the threat of Soviet SS-20 Mobile Missiles which can completely cover the European land mass from bases in the USSR.

The SS-20 and other Long-Range TNF Systems currently deployed give the Warsaw Pact an overwhelming advantage in long-range TNF capability (greater than 1500 kilometers range). The pact has about 285 SS-20 and 300 SS-4 and SS-5 launchers, giving them about 1150 Long-Range Warheads on Launchers; NATO has no comparable capability today, and will have only 572 warheads—about half as many—when deployment of Pershing II and GLCM is complete. The Warsaw Pact advantage in air-delivered bombs capable of being delivered at long range is equally disturbing. Our entire Long-Range TNF capability now in NATO is limited to 156 F-111 aircraft—capable of striking targets only on the Western fringe of the Soviet Union, and less survivable and less likely to penetrate Soviet Air Defenses than Pershing II and GLCM.

The military effectiveness of Pershing II and GLCM, providing NATO with a credible capability to hold targets in the Soviet homeland at risk, significantly enhances deterrence. The high accuracy and variable yields of these systems will allow us to strike hard targets, while also limiting collateral damage. They will do much to redress the significant imbalance in nuclear capability which now exists between the Warsaw Pact and NATO.

Deploying a mixed force of ballistic and cruise missiles hedges against the unexpected neutralization of either system, provides us a great deal of flexibility and greatly complicates enemy planning. Pershing II has a high assurance of penetrating Soviet defenses, allows us to reach critical targets quickly, and takes advantage of the existing Pershing IA structure. GLCM's longer range allows attack of deeper targets, although its longer flight time inhibits use against time-sensitive targets.

Taken together, Pershing II and GLCM offer a credible capability for NATO to execute a wide variety of military options. We feel that NATO's modernization program accomplishes two important goals: First, it allows us to make militarily significant strikes which the Soviet leadership cannot ignore; and secondly, it provides an incentive for the Soviets to take part in serious arms control negotiations.

Without question, the Soviets place the highest priority on preventing the deployment of Pershing II and GLCM next year, because they realize that these systems greatly increase NATO's deterrent capabilities, and because they represent an act of political cohesion on the part of the alliance.

Consequently, we and our NATO allies regard deployment of Pershing II and GLCM as our highest priority in theater nuclear modernization. In spite of anti-nuclear demonstrations, which always grab the headlines, the governments of Great Britain, Germany, and Italy realize the importance of these programs, and remain steadfast in their commitments to deploy Pershing II and GLCM on schedule. We have worked hard with our allies to implement the decision and, although there have been some problems, we are proceeding well with system and warhead development, and with site preparations in Europe. The United States has a great deal at stake in its commitment to meet the alliance's December 1983 IOC.

However, Mr. Chairman, once we deploy the first Pershing II and GLCM systems to NATO, we still face a difficult challenge—that of completing the full range of long range TNF deployments on schedule. The benefits of achieving a Full Operational Capability (FOC), while not as immediately obvious as achieving IOC, are no less important. From a cost standpoint, there are serious penalties associated with stretching out the Pershing procurement schedule. Equally important, if the U.S. were to make any change in deployment schedules at this juncture, we would be sending the wrong signals to the Soviet Union. Delaying Pershing deployments would be seen by the Soviets as the beginning of U.S. backsliding on the program and indicate to them that their political and propaganda efforts in Europe are paying off.

Maintaining the alliance's plans for Pershing deployment demonstrates the continued U.S. commitment and shows NATO's resolve to fully implement the 1979 ministerial decision. In addition, it provides SACEUR with enhanced military effectiveness and the capability to deter a Soviet attack on NATO by holding targets in the Soviet Union at risk. Any decision to stretch out Pershing II or GLCM would also undermine our negotiating position at Geneva. Our best guarantee that the Soviets will negotiate seriously is to proceed with the Pershing II and GLCM programs as planned.

In summary, by continuing with our deployment schedule, we not only provide SACEUR the weapons necessary for deterrence should the INF negotiations fail, but we also provide the necessary incentive for the Soviets to bargain.

Mr. Chairman, the Pershing II program is a crucial link in our NATO's Nuclear Force Modernization efforts. It must be maintained on schedule to allow us to fully

implement the historic 1979 Ministerial decision. In so doing, we will greatly enhance our capability to deter war, and to be able to terminate any war which may begin on terms favorable to the free world.

This concludes my statement. General Maloney is now prepared to address the fiscal year 1983 Pershing II budget request and procurement objectives, and Colonel Fiorentino will give you a review of the status of the Pershing II program. I would be pleased to answer any questions you may have, or, if you prefer, we can defer questions until my colleagues have testified.

Mr. STRATTON. I think at this point we ought to go into closed session and we by authority previously granted will ask those who are not cleared to leave the room.

I think the room is clear.

Dr. Wagner, let me just ask a couple of questions here before we go to General Maloney.

First of all, what is the capability of the SS-20, and what is the warhead?

Dr. WAGNER. The warhead—frankly, sir, I don't know the yield or size of the warhead off the top of my head.

Do you know what it is, General?

It is a [deleted] KT warhead and there are three of them, and they are MIRV'd.

Mr. STRATTON. That is 3 times 300?

Dr. WAGNER. Or roughly 900. I suspect that, from my knowledge of how the intelligence community models Soviet warheads, one ought to think of a substantial error bar on the [deleted] kiloton yield estimate.

The system can reach from behind the Ural Mountains to Great Britain, so it can cover from a sanctuary all of European NATO. It is a mobile system. There are reloads for the system.

Mr. STRATTON. We have stressed, or I have stressed in my opening remarks, the problem of potential delay in deployment that might be occasioned by holding up production. Could you comment on the possible delay in deployment that might attend the reluctance of our NATO allies to accept the system?

I was in Germany in February and at an Allied Military Conference and it seemed quite clear that we don't even have any positive agreement from either the Belgians or the Dutch. The German Social Democratic Party, which is the ruling party at the present time, is having its local units pass resolutions to the effect that even if the negotiations in Geneva do not bear fruit by the end of 1983, they would put a further moratorium on the deployment of the missiles in Germany unless and until there was some kind of a referendum that would approve them.

And judging by the sentiment over there, that kind of a referendum might be very difficult to develop. The German Defense Minister seemed to think that they could prevent that sort of thing from developing in the SDP, but there is some question as to whether the Schmidt forces might even be in control at the end of 1983.

What is the official position of the administration on that?

Dr. WAGNER. I would be less than candid if I didn't say the administration understands it will be difficult to insure that all of the arrangements that have to be made won't be difficult to make. However, let me say that, as you remember, one of the conditions that the Federal Republic of Germany placed on their acceptance of the deployment was that one other continental NATO member

also accept a GLCM deployment. The Italians seem to be standing firm, and the construction of the base for the GLCM deployment in Italy is proceeding and we see that part of the equation standing firm.

The construction of the GLCM base in Great Britain, at Greenham Common, is also well under way. I was there a few months ago and they are making good progress.

A point that I would like to add about the political situation in Germany is that hesitance on our part, which might come from technical delays, could exacerbate the resolution of the situation in Germany. What we can do from a military point of view, and from the DOD point of view which will help most is be ready on time, and that is why we want to keep the program on schedule.

Mr. STRATTON. I notice in Mr. Brezhnev's speech he indicated that any preparations for receiving this theater nuclear force as well as any actual employments of it in Europe would cause him to call off the freeze which he has magnanimously offered to impose otherwise. Presumably the employment of these missiles would also mean that we might be faced with an analogous measure in the Western Hemisphere. I take it that this is not something to worry too much about.

Dr. WAGNER. I think the best thing we can do is not to be swayed by those threats, and I think that they are threats, definitely threats, in every way.

Mr. STRATTON. You state in your remarks that the SS-20 and other Soviet initiatives threaten the credibility of the linkage between European nuclear forces and U.S. strategic deterrence.

Could you spell out exactly what that linkage is between European based nuclear forces and U.S. strategic forces, and will the deployment of the INF strengthen that linkage?

Dr. WAGNER. I think to amplify on that, let me point out what the SS-20 can do, being based as it is in the Soviet Union, and the key is in the word "sanctuary". It allows the Soviets to strike from their homeland into Western Europe, and at the present time, the only way that we can respond to that as the Alliance is with U.S. strategic forces, the FB-111 being today a marginal qualification on that statement.

However, I should add that response by the UK's Polaris also represents a significant additional step in the escalation, because that would bring into play for the first time the sea-based forces which are thought to be central strategic forces by and large.

So that the fact that there is a sanctuary for the SS-20's allows the Soviets to control escalation.

If we, however, deploy the Pershing II and GLCM, which based in Europe can strike at that sanctuary, then we have a response at an equivalent level of escalation which in turn, makes more credible the possibility of that response. To go beyond that, the Soviets would have to use their central strategic forces, which then couples to our central strategic forces. It fills in a level in the escalation ladder for us which we don't have now because we don't have a corresponding system.

Mr. STRATTON. These questions get responses in the record and I have a couple of others here that have been prepared for me.

You make a good case that the Russians have an overwhelming majority over NATO in long-range warheads. As I understand it, the strategy is overwhelmingly in the Russian favor, and that even the Pershing II and GLCM will not make a very substantial dent in this adverse balance.

In view of that, what would be the advantages of a freeze on nuclear weapons while negotiations are going on and what would be the disadvantages, and would this not simply freeze NATO into its present inferior position?

Dr. WAGNER. I think that question has two parts. The first one is implicitly a question as to why are we not deploying more of the GLCMs and Pershing II's than 572. The second part has to do with what a freeze would do.

To answer the first part, I believe that the 572 number is a combination of a political accommodation with our allies as to what would be acceptable to their people, as well as a desire to stand short by a discernible margin of a number which the Soviets feel could directly threaten their strategic forces based in the Soviet Union, other forces than the SS-20.

To turn to the part of the question that has to do with the advantages and disadvantages of a freeze, I would like to base my answer to that back on the point I raised about survivability. I think both with regard to the theater forces and, if I may broaden the statement a bit, with regard to the strategic forces, a nuclear force today would freeze the United States and NATO into a position where many of our systems are too vulnerable to a strike by the Soviet Union, and that in turn could tempt them to a strike in a crisis, and that in turn makes nuclear war more credible and more likely to happen rather than less likely.

I think that is my fundamental concern about the freeze today. We need to fix the vulnerability of our forces.

Mr. MAVROULES. On that issue, if I may pursue it further, don't we have enough firepower now to sustain our own security? It is not a mandated freeze, it is a voluntary freeze. A consensus throughout the United States and its people and the movement favoring a freeze goes a little deeper than just "I am an advocate of a freeze." If I thought for a moment we did not have enough firepower to protect our own people and throughout the free world, that would be another problem.

I think we do have that kind of firepower as a deterrent. What you are looking for is a consensus among the American people and perhaps a consensus among the people of the Soviet Union, although they are under communistic rule, because in the long run I think human beings are going to be discussing an arms freeze.

I am very interested in what you are saying, but I want to give you my presentation of an honest freeze. I think we ought to stop talking numbers at this point because I think we have seen firepower. Let's not talk about missiles. We know we have a pretty good Navy out there and in secret testimony and classified testimony we know about the invulnerability of our submarines, so therefore we do have firepower.

Now, with that in mind why can't we somehow encourage a freeze from the governmental agencies rather than across the board, and people getting up in arms throughout the country?

Maybe you can address yourself to that.

Dr. WAGNER. I can, sir. It goes very much to the heart of one's own philosophy about national defense and that might take a while to develop. To some extent I agree with your point about the numbers. I think the numbers are in a sense a secondary issue. What is important about the numbers is again, and I hate to sound repetitive, how they bear in stability and survivability of the forces.

I believe that the current U.S. ICBM force is vulnerable today. I think that something has to be done to fix that vulnerability, and you are aware of the measures that the administration is proposing and beginning to take to do that. It is a very difficult problem, and I think, frankly, you are going to see some changes in direction, if I may say so, in the next year or two. In my mind that problem has to do more with the qualitative characteristics of the systems rather than with the numbers. Numbers are important but endurance and survivability are more important. If I look at the bombers, the bombers of today, the B-52's are, in particular, vulnerable to an attack from the sea-launched ballistic missiles of the Soviet Union.

That problem, I think, can be fixed to some extent by rebasing, by buying the B-1 which has an enhanced escape time from the base; and by improving the sea-based leg, which is certainly the least vulnerable of the three.

In some ways, the vulnerability of the submarine is an on-and-off situation, and if it is ever fails it is not going to fail gracefully as the technologists say. It is going to fail catastrophically, because the submarines once found are very vulnerable, of course. So while I think they are invulnerable today, it is prudent to expand the scope of their invulnerability, which I think the Trident can and will do.

Of course, the fourth and in many ways the most important part of our deterrent is the command and control situation, communications and the warning which I think adds a very substantial degree of uncertainty to any calculation that might go through the Soviet military collective thought process during a crisis, when they are calculating these risks.

You mentioned influencing the minds of those in the Soviet Union. I realize this has become almost a cliche to say but I will say it anyhow. We have been, I believe, relatively restrained over the last decade in expanding and modernizing our forces, and I think that the Soviet modernization program—which has certainly put our ICBM's in jeopardy--has been, if anything more vigorous during that decade of U.S. restraint than it was during any period since World War II. Personal philosophy tends to come in when one assesses the goals of the Soviet leadership in what really motivates them.

Mr. HUNTER. Will the gentleman yield at that point for one brief question.

Mr. MAVROULES. I was going to ask one other question.

Mr. HUNTER. You touched on the Trident and the fact that we do have an invulnerability presently but if it fails, if our ability to evade detection lapses where it is easy to kill a submarine, there is a school of thought that the Trident production in fact exacerbates

that potential for disastrous consequences because of the fact that Trident is so big, it is therefore easier to detect.

We are also putting all of our eggs in one basket, so there is a school of thought that, in effect, Trident is taking us to the edge of the precipice and we should look at some other programs.

Dr. WAGNER. I am not an expert on the quieting of submarines, but my understanding is that while the subs are bigger, quieting technology is continuing and that we intend at least to make them quieter. I don't know how the tests have gone.

Furthermore, I think the way those submarines are likely to be attacked is with attack submarines, and additional range certainly makes that problem harder.

Mr. HUNTER. Thank you.

Mr. STRATTON. We are getting a little far afield on this.

Dr. WAGNER. I apologize for my long answer.

Mr. HUNTER. I apologize for pulling us off course.

Mr. STRATTON. There is one other question here which Mr. Klein has asked me to get your reaction to. According to him, the President was quoted yesterday in the Washington Post in a speech in Oklahoma as repeating his offer to forego the deployment of Pershing II's and GLCM's in Europe if the Soviets would dismantle Europe-based nuclear missiles.

Now, isn't this actually something different from the zero option, and wouldn't this mean that we would then partially disarm ourselves while the Soviets would still be able to target all of Europe and areas from their bases east of the Urals, and in that case would have been freezing the Soviet nuclear superiority?

Dr. WAGNER. I am not quite sure where to draw the line as to what is Europe, whether it is exactly at the Urals or a little behind the Urals. I know that the mobility of the SS-20 is an issue and I think your point is that the mobility of the SS-20 would allow the Soviets to base it in Asia or perhaps even well beyond the range of Europe, and during a buildup move it forward. I think that certainly is true. The SS-20 is mobile but it is not a battlefield-like mobile system. It does have signatures that I think one can see and perhaps track.

Mr. STRATTON. It can target all of Europe without being moved from east of the Urals, which is the main point.

Dr. WAGNER. The common definition of where European Russia ends is at the Urals and I guess frankly I would be concerned about that. I don't know what the President had in mind.

Mr. STRATTON. I know you are not an expert on arms control, but it was my understanding that the zero option meant that they would wipe out all of their SS-20's.

Dr. WAGNER. That was my understanding.

Mr. STRATTON. Not only those in Europe but those beyond the Urals, and I think if that is what the President said, he probably misspoke.

Are there any other questions?

Mrs. HOLT. I would like to ask just one.

When you say on page 6 that once we deploy the first Pershing and GLCM we have a difficult challenge. Are you talking about production vehicles?

Dr. WAGNER. I am talking about production, yes.

Mrs. HOLT. And not fiscal constraints but actually production?

Dr. WAGNER. Getting them out into the field in the numbers that I think will deter the Soviets.

Mrs. HOLT. Is there a nonnuclear mission for the Pershing II and the GLCM?

Dr. WAGNER. No.

Mr. BADHAM. Dr. Wagner, what is the site preparation timeframe, or cost and timeframe for Pershing II and GLCM?

Dr. WAGNER. I have a general idea, but I suspect that General Maloney or Colonel Fiorentino would have a much more accurate figure.

Mr. BADHAM. I want it for the record and a ball park figure would be fine because I think it should be clearly put in the record that unfortunately we get popular assumptions from time to time and we say Germany is going to take them and all of a sudden the missile is ready in December 1983 and the missile is there.

This hasn't happened but what is the timeframe?

Colonel FIORENTINO. We are planning P-II as a one-for-one replacement as a modular improvement of the existing P-I system.

That system is already deployed in Europe and has been there actually since the 1960's.

Mr. BADHAM. What is the warhead and the range and all of that?

Colonel FIORENTINO. Let me finish the preparation and then I will address that, if I may. From a site preparation point of view the site and the facilities which we are using now for the existing P-IA system are those which we will continue to use for P-II, so we will have no site preparation problems with P-II. We will simply take out a P-IA and put in a P-II, and it has been designed to fit. I am not able to respond to GLCM.

SITE PREPARATION

Dr. WAGNER. With respect to Pershing II deployment, no site preparations or cost are involved. Pershing II missiles replace Pershing la missiles in U.S. units already stationed in Germany. No new sites are required. GLCM deployment, on the other hand, requires construction of main operating bases—two in the United Kingdom and one base in Italy, the Federal Republic of Germany, Belgium and the Netherlands. Base construction is now underway in the UK and will begin soon in Italy in order to begin GLCM deployments on schedule in late 1983 together with deployment of the Pershing II in Germany.

The construction program to support GLCM bases is a two-part effort. NATO provides funding construction of operational facilities through its Infractucture Program and the U.S. finances, through Military Construction (MILCON), construction of base support facilities. Costs to NATO for construction of operational facilities at the six bases is estimated to be $243 billion and the U.S. MILCON costs are estimated to be $432 million.

Mr. BADHAM. What about P-IA?

Colonel FIORENTINO. That has a range of [deleted]. It is a nuclear capable system which has three different warheads ranging in yield from [deleted]. By contrast, P-II has a single warhead which has a [deleted].

Mr. BADHAM. Is that [deleted]?

Colonel FIORENTINO. [Deleted].

Mr. BADHAM. So really Pershing IA is a nuclear missile and we have 108 of them over there.

Colonel FIORENTINO. On launchers.

Mr. BADHAM. The problem is they won't reach the Soviet Union.

Colonel FIORENTINO. That is right.

Mr. BADHAM. They will reach to the Warsaw Pact but not to the Soviet Union.

Colonel FIORENTINO. Exactly.

Mr. BADHAM. When you say our Pershing II, does it have really a super guidance system or something?

Colonel FIORENTINO. That is exactly right.

Mr. BADHAM. It is a low trajectory?

Colonel FIORENTINO. It is a ballistic missile which goes outside the atmosphere as you would expect a ballistic missile to do, but one of the innovations in P-II is the fact we are going to a new type of guidance, called area correlation or radar terminal guidance, and that allows a very significant improvement in what we call our circular error probable [CEP] or accuracy.

P-I accuracy is listed as [deleted] meters and the P-II accuracy is a range of [deleted] meters. It is better than [deleted].

Mr. BADHAM. But will that warhead do all we want?

Colonel FIORENTINO. Coupled with the accuracy it will do more, and it turns out that as you trade off the yield and the accuracy, as you work that equation, you find out that accuracy is more important than yield. So with the accuracy that I have quoted you, even with those lower yields that I quoted you, we find out we get higher kill probabilities against the same target.

Mr. BADHAM. I have one more brief question.

In Mr. Brezhnev's statement about taking analogous action, the analogous action threat, was it he or the Washington Post, or the Post analyst who said Western Hemisphere suggested Cuba?

Did he really say Western Hemisphere?

Dr. WAGNER. I read what I believe was the full transcript of his speech, I am pretty sure it was the full transcript of the part that bears on defense issues, and he didn't say "Western Hemisphere" or "Cuba."

Mr. BADHAM. I think that should be clearly pointed out in the record because that again is our good friend on the Washington Post. Thank you.

Mr. STRATTON. The actual excerpt here is, "There would arise a real additional threat to our country and its allies from the United States. This would compel us to take retaliatory steps and would put the other side, including the United States itself, its own territory, in an analagous position." It doesn't say where.

Mr. BADHAM. The Washington Post analyzed that for us and they said Cuba.

Dr. WAGNER. It would be easy to do that to Alaska.

Mr. BADHAM. Surely.

Mr. MAVROULES. We will get into a discussion of that other, but quickly, what do you intend to do with the P-I missiles?

Colonel FIORENTINO. No decisions have been made. One of the options is to use them as test vehicles. We have several other programs at Huntsville, Ala. that need booster vehicles to test.

Mr. MAVROULES. You are not going to take them apart, and you are going to be able to use them somewhere?

Colonel FIORENTINO. It will depend. If these people can use them as target vehicles we would go ahead and make that kind of an arrangement. If there is no other use then ultimately we will demili-

tarize them. That is not such a bad option when you recognize that some of those missiles are 15 years old right now. I think we have gotten our money's worth from them, so we could demilitarize them and that would not be a waste.

Mr. STRATTON. Mrs. Byron.

Mrs. BYRON. The general condition of the Pershing I missile now deployed in flight, with respect to age-related ability and safety and security, could you give us a quick overview on that, and also is it necessary to modernize this weapon system notwithstanding that NATO agreement?

Colonel FIORENTINO. Let me talk to that in two parts, first the missile itself and then the remaining equipment.

Our missiles range in age from about 15 years old to the newest ones which we procured in 1978, so we have a fairly wide spectrum of age on the missiles. What we try to do in our test program is fire the earliest first, to get the older ones out of the system.

From a ground support equipment point of view, all of the ground support equipment, or the major items that we have in Europe right now were deployed in 1969. We are finding now that we are running into a repair parts problem.

I make the analogy of trying to find fenders for your 1948 Ford. It is a hard thing to do. As we look for repair parts now, we find out that because of its 20-year-old technology, suppliers have closed, gone out of business, or they have changed their product lines. The people who had the knowledge of how to do that technology have gone away, so I am facing an increasingly more severe problem each year in keeping the P-IA ready because of the problem in trying to find repair parts.

The system works very, very well when we give it a chance to work. The reliability is quite good and the flight test program is still quite good, and we do an operational test program annually which produces very fine results, but I can see the precipice coming in terms of each quarter I find another vendor who says, "I am sorry; I will not supply you those parts anymore."

This is becoming a major problem for me and I am spending increasingly more time and increasingly more dollars solving that problem on a case-by-case basis.

Mrs. BYRON. Were the P-I's and P-II's designed for NATO use?

Colonel FIORENTINO. My requirement is that they be worldwide. In fact, the P-IA has only been deployed in Europe and specifically in Germany. But my requirement is for worldwide operation, as is my P-II requirement.

Mrs. BYRON. Worldwide deployment—could you give me another incident or area where you think it could be utilized?

Colonel FIORENTINO. Well, it would essentially be anywhere in the world, except either the North or South Pole. Above about 55 degrees latitude you start to run into temperature problems, but anywhere within that band it would certainly be acceptable for operational use if the need should arise.

Mrs. BYRON. I have no further questions.

Mr. STRATTON. General Maloney, you are prepared to give us the details of the budget request for 1983 on the Pershing II and the procurement objectives and programs, you can do that at this time.

STATEMENT OF MAJ. GEN. JAMES P. MALONEY, DIRECTOR, WEAPON SYSTEMS OFFICE, OFFICE OF DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

General MALONEY. As you know, I am from the Department of the Army Staff. I am pleased to be here today. We mentioned the range of the Pershing II, which will have a range of [deleted] as compared with [deleted] for the Pershing I. And Bill mentioned the CEP, [deleted] about [deleted] meters CEP verses [deleted] meter circular error probable accuracy of the new system over the older system.

The first chart summarizes the dollars and quantities for the budget.

Pershing II

Fiscal year 1983:	*Millions*
RDT & E request	$111.3
Weapon system procurement request	508.6

Provides >2 times the range and considerable improvement in accuracy over Pershing 1A.

Fiscal year 1983—2d year of production, accelerated schedule concurrent development and production.

Total buy [deleted] missiles, 16⅔ battery sets.

3⅓ batteries and 21 missiles procured thru fiscal year 1982 FDP.

On the Pershing II program our total plan is to procure some [deleted] missiles and 16⅔ battery sets. A battery set of equipment comprises 9 launchers, 9 missiles, 4 platoon control centers and other ground support equipment. Of the [deleted] missiles, [deleted] are for operational purposes, 24 are for maintenance float, and the remainder are for 10 years of weapon surety testing. The Pershing has suffered from cost growth during the past year, as was accurately mentioned this morning in the Washington Post. The cost growth stems from the prime contractor's first-year production proposal but goes back to our genesis of the Pershing II program and our hasty preparation of cost estimates which were understated, both on the part of the contractor and the Government. Colonel Fiorentino will go into this in more depth.

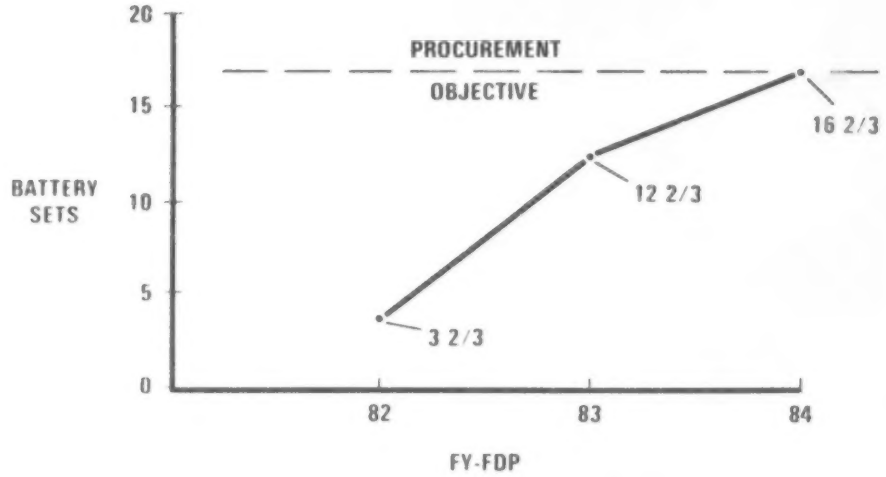
I would like to point out that the combined 1983 RDT & E procurement request is the largest of all of the funding years for Pershing, so this is the big year.

PERSHING II FISCAL YEAR 1983 BUDGET REQUEST

Provides for: Completion of the engineering development flight test program and procurement of 91 missiles and 9 battery sets.

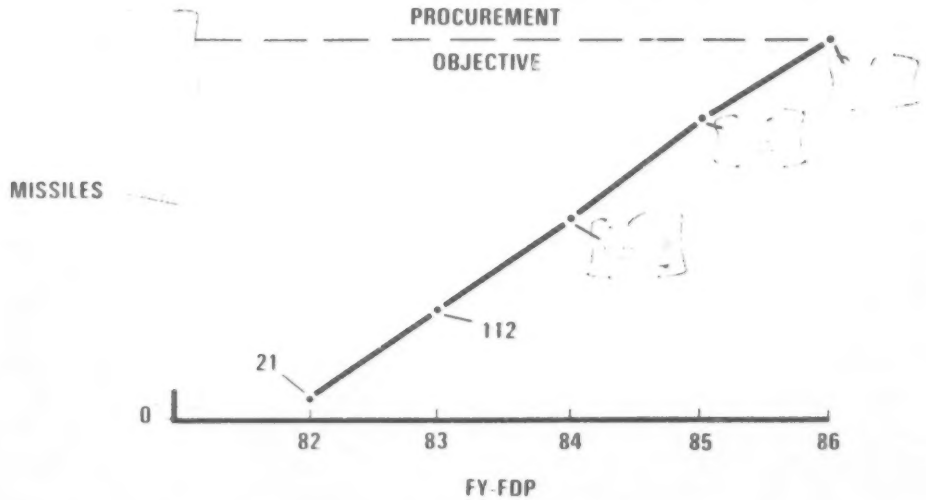
On the next chart we show that the RDT&E funds complete the engineering development flight test program and essential completion of the R. & D. program, and the procurements provide for the procurement of 91 missiles and 9 of our battery sets, so when we have this hardware funded under the fiscal year 1983 program we will have achieved about 75 percent of the full operational capability in Europe.

PERSHING II BATTERY SET PROCUREMENT OBJECTIVE



The next chart provides the battery set procurement objective and how we plan to achieve this over the years. Last year we planned to buy 9 battery sets and these plans have not changed. The 16⅔ battery sets are for 12 batteries in Europe, or three battalions and a training battalion in the United States.

PERSHING II MISSILE PROCUREMENT OBJECTIVE



The next chart shows the missile procurement objective.

Mr. STRATTON. What do you mean by a battery?

General MALONEY. A Pershing firing battery is an organization of men, about 160 personnel, and it is usually commanded by a major, so it is a small tactical organization.

Mr. STRATTON. What is that? You don't fire these from silos; and do you fire them from mobile apparatus?

General MALONEY. Yes, and coming back to an earlier question, the site preparation that Bill Fiorentino talked about is preparation to put the missiles in Europe in their kind of home bases, but these missiles are mobile and can move about in the field, and it takes about [deleted] to get into position once you have traveled to the position, about [deleted] to set it up. After a missile is fired it takes about [deleted] to be moved out of that area to go to another area to set up. You can set up in the middle of a forest, for example, and fire and move somewhere else and set up again, and in this way the missile is very difficult for the Soviets to target.

Mr. STRATTON. When you talk about a battery set, you are talking about some equipment to fire these?

General MALONEY. Yes, sir; that is correct.

Mr. STRATTON. I am familiar with what a battery is, but this is something different.

General MALONEY. One complete set of equipment that has three platoons.

Colonel FIORENTINO. Three platoons per battery and each platoon has three missiles that it can fire, so 19 missiles are ready per battery at any given time.

Mr. STRATTON. All right. Will you proceed.

General MALONEY. Since last year the fiscal year 1983 buy of missiles has been reduced from 134 to 91 missiles to accomodate the procurement cost growth which I mentioned a minute ago. Our total procurement objective has not changed.

Colonel Fiorentino is the project manager and he will take over at this point.

STATEMENT OF COL. WILLIAM J. FIORENTINO, PROJECT MANAGER, PERSHING II MISSILE SYSTEM, U.S. ARMY MISSILE COMMAND

Colonel FIORENTINO. I have a statement which I have prepared and which has been furnished to the committee. In the interest of brevity, I would like to brief extemporaneously some of the charts and hit some of the highlights contained in this briefing, but you do have the full information for the record.

Mr. STRATTON. Without objection, your statement will be included in the record and you may proceed.

Colonel FIORENTINO. May I have the engineering development program chart, please?

I would like to give you a feeling for the status of the program and I must go back and talk a little bit about the engineering development program because of the fact that we do have concurrency.

PII PROGRAM STATUS—ED PROGRAM

No current major technical problems.
Program two thirds complete, will end on schedule.

Contractor overrun likely/Army overrun unlikely.
Concurrency.

The first chart indicates in highlight form where the engineering development program stands right now. First and foremost, we have no major technical problems within the program. We have had some in the past and I am pleased to say we have taken care of each one that has arisen. There may be others that could come up in the future, but right now I have no indication of any hard, solid technical problems which we can see on the horizon.

From a schedule point of view, the development program is about two-thirds of the way through a 57-month program, and we will end on schedule.

Now, as a matter of fact, one of the things I will talk about is the fact that I have been forced to slip my first flight. That was scheduled for April 26 of this year and I rescheduled it now for the [deleted.] The reason for that is not because I am having technical problems in the system in terms of the hardware working, but the problem is one of a production situation.

I am building my engineering models on my hard production tooling and I am now going through the agony that a project manager goes through in making the transition from drawings to hard production; so I have schedule delays and manufacturing problems but no technical issues. That has caused me, or might have caused me to stretch the program out a bit, however, as a completely separate event we restructured the flight program to take care of some testing issues. These two things, I think, are going to be comfortably balanced out, so I should end the program on schedule or perhaps a little bit ahead.

Mrs. HOLT. I don't understand the production difficulties. You know what you have to do and you have the people to do it with, and the machinery to do it, and why are you having difficulty?

Colonel FIORENTINO. What one does in a program like this, the first thing that really goes to the production line are the drawings, and those drawings have to be translated into several things: They have to be translated into machinery and tooling to do the work; they have to be translated into the processes that are required to do the work; and they have to be translated into the people who are trained to do the work.

Mrs. HOLT. Isn't that part of the advance planning? It seems to me——

Colonel FIORENTINO. It is part of the advance planning.

Mrs. HOLT [continuing]. If you have everything on schedule, the production should go right in.

Colonel FIORENTINO. What we find out is that with a system of the kind of complexity that we look at in major programs, having done all of that advance planning, when you get to the factory floor you inevitably find some kind of a problem that occurs.

Mrs. HOLT. Where is the factory floor?

Colonel FIORENTINO. We refer to it as Orlando, Fla., but that perhaps could be misleading. For instance, my motors are built in Salt Lake City, and then we do most of the assembly work in Orlando.

Mrs. HOLT. The problem is in Orlando?

Colonel FIORENTINO. Primarily in Orlando, yes; that is where the manufacturing problem is that we are having right now. You have

to translate that paper into hardware and there are inevitably problems that occur when you try to do that.

Mrs. HOLT. All right.

Colonel FIORENTINO. One of the results of those manufacturing delays that I have seen, because we are doing this for the engineering and development models, is that it looks like there is a good likelihood that the contractor will over-run his contract with the Army; however, there is no danger in my mind right now that the Army will over-run its contract with the Congress, and the reason for that is that we have reserve funds which have been programed and we call these TRACE, total risk assessing cost estimate funds. I have TRACE dollars, programed for fiscal year 1983 and also for fiscal year 1984. So as I look at my contractor and suspect that he may have a problem, I see the dollars available within the program and the budget system to take care of that and any likely problems that I may have.

So, a contractor overrun is likely, but an Army overrun with the Congress is not likely.

Mrs. HOLT. Why is he having the overrun problem—and I know that sounds silly—after you just explained what your production problems are, but is it labor cost or what?

Colonel FIORENTINO. It certainly is not a silly question. Inflation is a part of it, but I don't want to place the whole blame on the state of the economy. It is a contributor.

I think, really, there are two reasons why he is having his cost problems: First, you will remember back to the first item on my chart where I said we did have some technical difficulties, and we have overcome those. We have had problems which we have solved and those have cost us time and money. In making up that time—and we have made almost all of it up but not all of it—we have gone into the overtime operation to get back up to schedule.

Mrs. HOLT. You made changes in your original program, did you?

Colonel FIORENTINO. There were changes that were made to the program before we began the development phase, the engineering development phase, and those were mandated changes; but then we also had some changes that we had to make during the program to make the system work. I have had no significant changes, once we had gotten started in terms of changing requirements. We did have some before we began and I am living with the results of those changes, but during the program I have been very stable; but in order to hold stable, the contractor has had to spent money, particularly in the overtime arena. A tight economy is a contributor but not the only thing.

Now, if I may, I would like to talk about the concurrency because there are good and bad things about concurrency. What concurrency means to me in my specific program is that I will be beginning production before I have completed my flight test program, so that is an element of risk that enters into it. We think we understand what those risks are and we believe that they are manageable and controllable because we feel we have identified them, but there is risk in the program because of concurrency.

The other side of concurrency is that it will shorten the program by a year, and that year equates to about $200 million that we have taken out of the program because of concurrency.

So, we feel that in addition to doing the political kinds of things that the IOC allows us to do, concurrency also has significant meaning to us because it does save money.

PRODUCTION PROGRAM

Long lead contract awarded December 31, 1981.
Full production contract award June 30, 1982.
IOC—December 1983.
Cost growth—Nunn amendment.

	Percent
Fiscal year 1982 production	+29.6
Total program	+56.8

The next chart I would like to talk about is the status of the production program and where we are there. The most significant thing, I think is that we have awarded a long lead time contract, in December of last year, so we are, in fact, doing the long lead work right now. Our schedule still, and has for a long time, shows that we will go to a full production contract award by the end of June of this year. That is still the plan and we are on that schedule. All of that will support the IOC being met in December 1983, as I am required to do.

I do have a problem in the production program which I need to share with you, and that is the fact that when I got my first production cost estimate it was significantly higher than I thought it would be, and in fact, it was so high that I sent it back and said let us take a second look at this. I have gotten that second look back and it is unfortunately still high, so I have now a threshold breach of the Nunn amendment which equates to about 30 percent in the fiscal year 1982 production program and 57 percent for the full program.

There is another way to characterize that breach, however, which is perhaps more dramatic, and I have a chart that will show that to you. It is in terms of the total dollars of the program.

What that chart will say is that the development dollars have stayed constant but there has been a little bit over $1 billion increase in the production program, and I will explain that.

Mr. STRATTON. Could you refresh our minds a little bit. This is the first time we have seen the Nunn amendment applied to an actual case. Could you state what the effect of the Nunn amendment is? What is the figure 25 percent or 15 percent?

Colonel FIORENTINO. You are right in both cases. His figure was if there was a breach of 15 percent or more then the Secretary of the Army had to report to the Congress. If the breach was 25 percent, then the Secretary of Defense had to report to Congress. So both of your figures are correct.

Mr. STRATTON. Were those reports made?

Colonel FIORENTINO. Yes, sir. The Secretary of the Army report has been rendered, and I believe the Secretary of Defense report is not required until April 8. It is 60 days after the initial report, and I see no reason why that won't be made.

Mr. STRATTON. The Secretary of the Army has reported the 15 percent?

Colonel FIORENTINO. No, sir; he has reported these numbers with the reporting that he is required to do, and the Secretary of Defense has additional things on which he must report.

General MALONEY. The Army had five systems which breached the Nunn amendment. The reports were rendered on the day required, which was about a little over 1 month ago. I personnally brought them over and gave them to the chairmen of the four committees or to their SAR staffers for delivery to those chairmen. They have since been proliferated here, but we could certainly provide copies.

Mr. STRATTON. I haven't seen any. It seems to me that the Procurement Subcommittee ought to be the ones who would see these things.

Then what are you supposed to do once the thing has been reported? This is something that Mr. McCurdy was working on and trying to develop some similar arrangement, and I am just interested in seeing whether this thing is really going to be effective.

General MALONEY. It is effective. If I could give you a kind of personal view as to what occurs as a result of the Nunn amendment—as you know, we report quarterly in our reports and we report these kinds of cost data but not against these 15 and 25 percent thresholds. Rather, we compare it with the previous SAR report. The Nunn amendment report, however, requires that the Secretary of the Army personally sign off when he breaches a threshold and that the Secretary of Defense personally sign off if it is a higher threshold. So the effect has been to focus the senior leadership within the Department of Defense on these significant breaches of cost growth. It has been to bring these concerns into the front office with more impact than I have seen in the 5 years that I have worked on this stint in the Pentagon.

Mr. STRATTON. Who gets beaten up on it; do you get it, or does the contract manager?

General MALONEY. It sort of starts here, but, believe me, it goes up the entire chain.

Mr. STRATTON. Do they put you in the brig for a while, or what?

Colonel FIORENTINO. I think the best way I can explain it, I have been project manager for almost 3 years and until recently I have seen an Under Secretary of the Army once, in one of my briefings, and never spoken with the man. I am now getting fairly familiar and well acquainted with the present Under Secretary of the Army and I have had a series of meetings with him and I will see him again next week.

Mr. STRATTON. That meeting with the Under Secretary isn't going to stop the overrun. What do you have to do, go back to the contractor and work him over?

Colonel FIORENTINO. Yes, sir; it flows downhill and I will show you a chart of some of the progress we have made in cost control. My view of cost control—and I am going to get ahead of my chart—the key to cost control is recognizing the proper costs to begin with. If I beat him up enough on my production program such that he tried to buy in, and I let him, I have not controlled cost, all I have done is defer a problem, and maybe the next guy catches the blame and I get off the hook. That is not cost control; that is a charade.

So, my rule is that the first step to control cost is don't fool yourself and know what your costs are and program for them and then control them. That is the keystone to the program.

Dr. WAGNER. We are making it sound too much like an accounting thing. I think another thing that happens is that the people who are managing the program dig in and find out what the problem is, and if there is a technical problem, bring in another contractor for a subsystem, or whatever.

Colonel FIORENTINO. I will show you some of the things we have done about it. We have taken some——

General MALONEY. If I might interject another comment, the Nunn amendment has had a very salutary effect, I believe, but it is certainly not the only factor that has been at work within the Department of Defense.

When Mr. Carlucci took over in his capacity, he came up with a number of initiatives based on a study of what should be done to improve management within the Department. The Secretary of the Army created a Cost Control Committee and this was before the Nunn amendment came out, and the Under Secretary of the Army and the Vice Chief of Staff also worked on costs and what could be done to improve it. These things have all had a very positive bearing on focusing management attention on cost control.

There are a number of initiatives that crossed the lines of every program manager, whether he is currently in good shape or whether he has had a significant breach, as Colonel Fiorentino has had, that I truly believe will significantly improve our cost management within the Department.

PERSHING II TEST STATUS

TEST AND STATUS
Design development: Complete, prototype designs released.
Captive: First series verified accuracy, captive tests with prototype hardware very successful so far.
Motor: Kevlar case, thrust reversal, and case vent designs demonstrated, propellant characteristics verified with subscale and full scale tests, completed 10 static firings, dual testing to begin late March.
Subsystem and system: Subsystem dual underway, GVS underway, Mode III underway, system integration to begin early March.
Flight: DT/OT II restructure into integrated program, first flight slipped to late may (possibly June), flight tests reduced by 10.

Colonel FIORENTINO. I am not going to go through this test program chart in detail, but I do offer it with explanatory comments in my statement, to give you an idea of where we stand in the test program and to assure you that from the tests that we have done these things are working. The hardware, when we get it, even though we are getting it late, does work and it does perform well.

I think the two major items are captive flight and motor testing. Captive flight testing is a technique where I take the radar and in the new guidance section that we discussed earlier, I mount it underneath an airplane and fly it against typical representative targets. The results from that program have been very encouraging and so that is going well.

The other dimension that is an important link is in the propulsion area. Can we attain the range? Propulsion is the area in which

we had our major technical difficulty. It has been solved and testing has shown it to be a successful solution, and that program is now going well.

PERSHING II—COST INCREASE ELEMENTS

[Dollars in millions]

	Total program	Percent increase
Estimating error	$339.5	33
Program definition	(266.0)	(26)
Hardware changes	(73.5)	(7)
Inflation difference	264.7	26
Schedule changes	215.3	21
Economic	144.0	14
Overhead changes	54.7	5
Total	1,018.2	100

The next chart, please. Mr. Chairman, this cost increase chart highlights for you the magnitude of the problem that we have in the total program. You will notice the center column indicates that we have a problem which is a little bit larger than $1 billion in the program, and the bulk of those dollars is, in fact, in the production program. The reason I say that is that there was an escalation change made in the R. & D. program that offset that number by about $3 million, but the growth is a little bit over $1 billion in the production program. I have shown the percent increases in one column and you will notice that the foremost contributor is, in fact, what we call estimating error. That basically says that when we began the design of the program and the concept, obviously we did not have our full drawings. As those drawings have matured over the life of the development program we have found out that they turned out to be significantly more complex than we had expected they would. That characteristic accounts for the 26 percent that you see for program definitization.

On top of that, we had some things that we knew we had to do and we thought they would cost a certain amount of money. When we got into them they cost more, and those I call hardware changes.

The way we were going about it was not adequate and that accounts for about a 7-percent portion of our problem. The inflation increase that we discussed earlier is shown as contributing about a 26-percent portion of my problem.

Then from that we go into some lesser items, procurement schedule change, 21 percent. That came about by virtue of the fact that there simply was not enough money in my funding profile to accommodate the effects on the chart. As a result of that we stretched the production program out by a couple of years. Then, by subsequent action by the Department of Defense it has since been reduced by about one year. Nevertheless, the overall program stretch out has contributed to about a $200 million increase.

We have some economic changes, changes in inflation indices that have been made, and you see the 14-percent increase there; and then some changes in accounting procedures within the factory

itself, within the contractor organization, about a 6-percent contribution.

PII COST CONTROL

Recognize and budget for expected cost; cost control program.

[In millions of dollars]

In baseline:	
Requirements scrub	$15
Breakout (fiscal year 1984)	92
Production engineering	14
Value engineering	
Second sources	
Shorten program (DRB)	197
Fixed price contract (fiscal year 1984)	
Rigid change control	
Cost reporting/program reviews	
Candidates for baseline:	
Multi-year breakout	95
Production engineering	43
MM & T	
Second source	
Value engineering	
Requirements scrub	25
Shorten program	
Should cost	

The next chart, please. What I would like to do is discuss a little bit with you what we are doing about those problems.

This is the cost control chart where I said I was getting a little ahead of myself. Again, the foremost principle of cost control is that I have got to recognize what my costs are, and I have got to program for those costs. If I do that then I stand a chance of having cost control work. If I don't do that, I am doomed to failure. So that is the key to it and that allows me to have a cost control program.

I have two blocks on the chart. On the left-hand side we talk about the cost of savings or the cost reductions that have already been accounted for in the baseline program, and then on the right-hand side I have some additional candidates that I hope will mature, such that I can see additional reductions in those in the program.

We look at requirements, continually testing requirements, both contractual and operational, and you will see two entries on each side of the chart, where we already have had a contribution from a requirement scrub and I am anticipating further contributions from requirement scrubbing.

We have a technique in the system which we use in P-I and P-IA which we call breakout. In my 1984 production buy I will use that process. What breakout is, is a technique that says once I have a firm design and I know that this will work, then instead of buying that through my prime contractor, I can go directly to a subcontractor. I can buy the item and avoid the fee-on fee-situation. That is an almost $100 million contribution that we have already taken in the baseline program.

In production engineering, we are always looking at better ways to do the manufacturing job, the value engineering function, and we are also trying to bring in second sourcing, and in my system

the key things in the second source tend to happen at a fairly low level, but we have seen some cost savings that have accrued from that.

Again, I mentioned earlier that the Defense Resources Board at the Department of Defense level had taken some action and they applied additional funding to 1983 and 1984 which shortened the program and have resulted in $197 million in savings. That is already reflected in the numbers that we have talked about.

Mr. STRATTON. You have a cost down here on the right-hand side, and isn't that the figure that you ought to have available when you take a look at your bids, to see whether people are buying in?

Colonel FIORENTINO. The way I am going to use that cost, Mr. Chairman, is not as a club to bludgeon the contractor into a lower figure and risk a buy-in, but rather to assure that the Government and the contractor come to a fair price, and that is my utilization of should cost. That study is being wrapped up now. If the results are available, we will be starting the contract negotiations for the full production contract award early next month, and we will use that "should cost" as the touchstone, and where we and the contractor agree on a subelement, that is fine, and where we disagree, that is going to be something that we have a lot of hard discussion on.

Mr. STRATTON. You don't have the contract out on this?

Colonel FIORENTINO. We have a long lead items contract right now, but we do not yet have a full production contract.

Mr. STRATTON. A long lead time and the R. & D. are what have created the cost growth?

Colonel FIORENTINO. No, sir. I would not say that. The R. & D. are what have created the cost growth?

Colonel FIORENTINO. No, sir. I would not say that. The R. &. D. and the long lead contract are representative of the concurrency that we have in the system, and in a nonconcurrency system IO would be much, much further along in my test program before I had a long lead contract. Because of the concurrency, we have that long lead contract, about a year earlier than I would have. I have some candidates that I have not matured long enough to put in the plan. We have the multiyear concept. Again, we are anticipating about a $95 million concept. Again, we are anticipating about a $95 million net saving. There would be some increased costs in the new years, and it looks like about $95 million that we can save overall.

Again, we are doing the production engineering in terms of doing the manufacturing process better, and I have $3 million worth of candidates here. I, in fact, have another $12 million in candidates that haven't matured enough yet. I recognize that all of these may not pan out. I am exposing to you some of the things I am working toward.

Then another requirement scrub, perhaps $25 million, will come out of that. I have shown a shortening of the program up here with a question mark. The Defense Resources Board has already shortened the program once, and the Under Secretary of the Army has asked me for additional candidates and additional ways that the program might be shortened. I have given him a list of those options.

Obviously, each of those options requires earlier and earlier money, and the Department of Defense will have to make some judgements as to whether that is reasonable. I put the should cost up here not so much because it is a reduction but rather because if that allows me to come up with a fair price, then we go back to the first item on my chart and I have recognized my cost and I will program for it, and then I can keep that under control.

Finally then, to summarize the program quickly, the test program is underway right now and we have no significant technical problems within the program. The long lead procurement did begin in December of last year and a full production contract is scheduled to be awarded in June of this year. Then finally, we will meet the IOC; I am confident of that.

Mr. Chairman, that concludes my informal remarks and I would be happy to answer any questions for you, if I may.

WRITTEN STATEMENT OF COL. WILLIAM J. FIORENTINO

Mr. Chairman, Members of the Committee; I am Col. Bill Fiorentino, PERSHING Project Manager. I am here today to give you a brief report on the status of the program and to discuss costs and their control.

PERSHING II - FINANCIAL SUMMARY

	FY 81 & PRIOR	FY 82	FY 83	FY 84	TO COMPLETE	TOTAL
RDT&E	406.1	150.6	111.3	23.6	0	691.6
WPN SYS PROC	1.9	221.6	508.6	431.1	957.6	2120.8
QTY - BATTERY SETS	0	3 2/3	9	4	0	16 2/3
QTY - MISSILES	0	21	91	[illegible]	[illegible]	[illegible]

$(000,000)

This slide shows total program costs in then year dollars and quantities. The R. & D. cost of the program has been relatively constant over the course of the program—it has been increased because of inflation increases and has actually seen a small decrease due to engineering. The procurement line is where we have had our cost increase problem. The figure you see here is $1.018 billion higher than the fiscal year 1979 estimate. The major reasons for this increase were errors made in estimating the manufacturing complexity of the system and the effects of inflation. The bottom of the chart shows the quantities of battery sets and missiles which we are procuring.

DEVELOPMENT PROGRAM

Next, the status of the PII Engineering Development Program: Today, I am pleased to say, we do not have any major unresolved technical problems. We have experienced major technical problems but each of them has been resolved. The Engineering Development Program is approximately ⅔ complete. Designs have been released, prototype hardware is being fabricated and the flight testing of the system will begin shortly. The test program is currently about two months behind schedule as a combined result of the technical problems we have encountered and solved, and delays in getting the prototype hardware through the factory. Although these delays have forced me to slip the date of the first PII missile flight test, the program will end on schedule. This is partly due to the fact that, for unrelated reasons, the flight test program has been restructured and the number of flights has been reduced from 28 to 18.

The costs for the Engineering Development program are in sound shape. While we expect to have a contractor overrun, the overall program will be completed within budget. This is insured by the $52 million of TRACE contained in the PII budget in fiscal year 1983 and 1984, as well as a savings resulting from the restructured flight test program.

Finally, I should mention that there is a large degree of overlap or concurrency between the Engineering Development program and production. This concurrency is required in order to maintain a December 1983 IOC. It does add certain risks to the program; however, I believe that the net effect of this acquisition strategy will be an earlier fielding of the system and a lower cost to the Goverment.

PRODUCTION PROGRAM

As dictated by the program concurrency, the PII production program is underway. The Army signed a contract on 31 December 1981 to produce long lead items for the fiscal year 1982 production program. The Army will sign the full production contract this June to complete the production of the fiscal year 1982 hardware. The fiscal year 1983 production contract will be signed in October, 1982. The system will be deployed to achieve IOC in December 1983. The PII procurement cost has grown significantly. In terms of the Nunn Amendment criteria, the fiscal year 1982 unit procurement cost for an equivalent battery set of hardware has grown by 56.8 percent. These costs are our best estimate today based upon Government analysis of proposals received for the fiscal year 1982 and fiscal year 1983 production programs. However, I must say that I believe they are reasonable and should not grow as we go through the process of negotiations. In accomplishing this process, I do not intend to force these costs to an unrealistically low or "buy in" level only to have them grow again.

COST CONTROL

This chart outlines my program for responding to the cost problem. The most important aspect of cost control is to recognize and budget for expected costs. The left hand column shows cost control steps which have already been taken and whose effect is included in the current program estimate. Briefly, these areas are: Requirements scrub refers to administrative contract requirements, not system performance requirements. We have reduced fiscal year 1982 funding requirements by $15 million by this process. Breakout refers to a process whereby, once the producibility of the system is validated, the Army will buy major components directly from subcontractors rather than by going through the prime contractor. This process was used successfully in the P1 and P1a programs and will save $92 million over the life of the program. Production Engineering techniques such as Value Engineering and Second Sourcing have already saved $14 million. In December 1981 the Defense Resources Board added funds to fiscal year 1983 and fiscal year 1984 which avoided a total program cost of $197 million. The other factors listed are characteristics of the program which do not carry specific dollar values.

The right hand column shows several candidate techniques which have not yet produced savings, but which look promising at this time. Using the multi-year concept could generate an additional $95 million savings. The Production Engineering techniques shown—Manufacturing Methods and Technology, Second Sourcing and Value Engineering show an estimate of $43 million with some additional candidates being examined. Another requirement scrub—this time in the area of types and quantities of trainers—could save $25 million. We are attempting to shorten the program further which could yield further savings. The Army is conducting a "Should Cost" study which, while itself not a cost control technique, will provide the

Army the basic data to insure that the price finally negotiated is fair to both parties. A fair price becomes the basis for a contract whose cost is under control.

TEST STATUS

The PII testing can be summarized by saying that delays are being experienced as a result of delayed fabrication of hardware, but when hardware is received and tested, the results are good. To date, all development testing and design verification has been completed. Fixed Wing Aircraft Captive testing of prototype hardware is underway and showing good results. The motor area is where we have found and solved our greatest technical challenge to date. The originally chosen thrust reversal technique did not work and an alternate design was required. This new design has now been static fired and verified. Subsystem qualification testing and the Ground Vibration Survey are underway. Mode III is the first testing of software interacting with major hardware components. System integration of all hardware and software will begin this month. The flight test program, as I mentioned earlier, has been restructured. The new plan integrates Development Test II and Operational Test II into a single test program in order to test operational characteristics as early as possible. This will involve checking the man-machine interface with soldiers as early as July 1982. The numbr of flights has been reduced from 28 to 18 with four extra missiles being held in the program for backup. These flights will begin in early June 1982 and will be completed by June 1983.

Fiscal year 1983 procurement cost

[ESC dollars in millions]

Contract (hardware)	415.0
Other Government agencies (hardware)	15.0
Engineering changes	17.0
Engineering services	40.6
Contractor	(35.0)
In-house	(5.6)
SWAP	5.1
TMDE	5.6
Initial spares	10.3
Total	508.6

The total PII procurement budget for fiscal year 1983 is $508.6 million. The major portion of these dollars will be used to procure hardware. Additional dollars are used for engineering changes and engineering services. SWAP is our name for the activity required to modify and exchange PIa and PII hardware in deploying the system. TMDE is the Test, Measurement, and Diagnostic Equipment required at the depots for maintenance and repairs of PII hardware. Initial Spares are those spares required at the deployment of the system to enable in-the-field repairs and replacement of hardware. At the completion of this year's effort, the production program will be approximately 35 percent complete.

HIGHLIGHTS OF PAST 12 MONTHS

The most significant achievement of the last year is the completion and freezing of the design. This established a design baseline for both the R&D and Production programs. The second phase of Captive Flight testing of the Terminal Guidance System is underway and is showing good results. All of the major technical problems which have been encountered have been solved. The most visible demonstration of this is that three static motors have been fired with the redesigned thrust reversal technique. An initial Production Readiness Review has been completed and the final review will be completed in May 1982. The long lead item production contract was awarded in December 1981 and will be followed with a full production contract in June 1982. These contract actions support the December 1983 IOC. The Government Should Cost Study has been completed and its results will be used to support the Government's position in contract negotiations which will start in April 1982.

COST INCREASE ELEMENTS

The cost increase which the program has seen is $1.018 billion. It is accounted for within the following categories. Estimating error accounts for approximately 33 percent or $339.5M of the problem. This consists of primarily underestimating the man-

ufacturing complexity of the system. A relatively simple measure of this phenomenon is the fact that the number of parts in the missile has increased by 35 percent from the beginning of the program. A second contributor is the amount of inflation which has been experienced by the program and which is forecast for the remaining effort. There is $264.7M (26 percent) involved in this area. Those two increases made it unreasonable to add dollars to the program to buy equipment at the originally programmed quantities. As a result, the program schedule was stretched which resulted in an increase of $215.3M (21 percent). The OSD inflation indices were revised upward which added $144.0M or 14 percent to the program. The final contributor is a $54.7M increase (5 percent) which results from a change in the way overhead rates are computed.

SUMMARY

In summary, the test program is continuing without major technical problems, we will begin full production in July 1982 and expect to meet the Dec 83 IOC.

Gentlemen, this completes my briefing. I would be happy to answer your questions.

Mr. STRATTON. Well, I think the bottom line question is whether you feel that the recommended delay by the GAO for 4 months to allow time for further testing and evaluation is worth undertaking in view of the risks that we would face in Europe?

Colonel FIORENTINO. Mr. Chairman, my personal view was that we should not do that; however, my personal view was examined on December 21, 1981 by a special Army System Acquisition Review Council [ASARC] which considered that and the judgment of the ASARC was that we should not undertake the delay. If we were to undertake a delay such as that right now, there is no question that we would have to miss the IOC.

As we look at the status of the program from a technical point of view, does the system work, the answer is yes; it is working right now as tested, and the testing we have done today supports that.

So, the position of the Army is that that delay should not be undertaken and that specific question has been looked at very carefully.

Dr. WAGNER. How much will you risk in your production program during the first 2 or 3 months, during which the first couple or three flights, as I understand it, will occur?

Colonel FIORENTINO. The spend-out rate that we are looking at for the full production contract, once it is awarded—and I don't have the precise figures—but it starts off at $3.5 million for the first month, and it increases fairly gradually, such that by the time we reach the end of the year, the end of this calendar year, we would have committed somewhat less than $50 million. But the first several months are at the rate of $3 million or $4 million per month.

Dr. WAGNER. If you found after the first two flights that you had a serious problem and you had to go back, you might have spent $3 or $4 or $5 million on production. Frankly, I think his assessment is that things are going to go well on those flights and so the trade-off is between a somewhat artificial delay of a few months, which seems to me to have substantial impact on the political issues involved, as opposed to saving $3 million or $4 million or $5 million.

Mr. STRATTON. The GAO report says they didn't request comments on the report before it was issued, but they said that they did discuss the draft of the report with high level officials associated with the program, and they agreed with the facts presented.

Colonel, did they discuss the report with you and did you agree with the facts presented?

And then the final question is, did you agree with the recommendations? I gather that the answer to that would be no, but what is the answer to the other two?

Colonel FIORENTINO. The draft of the report was discussed with me and some accomodation of my comments was made, at my organizational level, the final copy was not discussed with me before it was published, but I did not have a good look at the draft. Some of my comments were incorporated. From a factual point of view, the report is reasonably accurate. There are some one or two errors of fact in there, but I do not want to fault the report for that. In a piece of work like that, that inevitably happens.

I think the more significant thing, given that I would accept the vast majority of the facts as correct, is the impact of those facts. One of the facts that is correct is that on the two-vehicle issue we would need a set of metric wrenches versus a set of standard wrenches, and so my response was, "So what?" Given that we have those, that doesn't make the vehicle unsupportable.

While it is true we would require another set of wrenches, that does not have any great impact.

General MALONEY. I would like to add to the comments of the project manager that we at the Department of the Army level did have an opportunity to examine the GAO draft report and we did provide comments to the GAO based on the final report.

We agree that practically all of the facts presented are correct, and we agree with them.

We did not agree with the conclusion that the GAO reached, and I think it is important to understand, sir, that the GAO felt that we should achieve the IOC. They felt, however, that we might be able to squeeze 4 months out before we made the production decision and still make that IOC. We disagree with that conclusion, although we did reexamine the program to see if we could squeeze it down as the GAO suggested.

I think that is an important part of their conclusion. We did not agree with them in certain other areas of conclusion, but not in areas of substantive fact.

Mr. STRATTON. Mr. Klein, did you have any questions before you have to leave?

Mr. KLEIN. No.

Mrs. HOLT. We are trying to reach full operational capability. Is that the only way we are going to really scare anybody?

Dr. WAGNER. It is really both. I think a delay in either the IOC or FOC would have a real impact.

Mrs. HOLT. Ultimately it is just putting one or two, and that is not going to be important?

Dr. WAGNER. I think one or two is not going to influence the Russians as much as the delay, but the impact of a delay might give the governments involved an excuse for a weakened resolve.

Mrs. HOLT. If we go ahead then, you feel confident that we can reach full operational capability in a very short period of time?

Colonel FIORENTINO. The program we have for reaching full operational capability requires a 2-year period.

Mrs. HOLT. You think that we can do that?

Colonel FIORENTINO. Yes, ma'am.

Mrs. HOLT. I don't have anything else.

Mr. STRATTON. Are there any other questions?

Well, thank you very much, gentlemen, I think it has been very helpful, and we appreciate your testimony.

Mr. HUNTER. I had one question.

And the chairman touched on this and I either missed your response or I don't think you answered it fully—that is, simply, what do we do if Helmut Schmidt doesn't have the plan that he has when the time comes to put them in place, have we any contingency? If the resolve in Western Europe continues to erode, have we got any contingency plans and can we put in part of the program and leave part of it out?

Dr. WAGNER. GLCM, as you know, is planned to go into Italy, England, and as Germany. I wouldn't want to venture a guess as to how a weakening on the part of the Germans would influence the Italians or the British. I think it might not. They seem to be hanging in.

As far as the Pershing goes, I don't know of any plans to do anything with Pershing in any other basing location.

Mr. HUNTER. Is there any way we can break it down to get the project started over there while we are still building the units? Is there some way we could solidify the present political commitment to take effect?

Dr. WAGNER. On GLCM we actually have literally broken ground in several places, in Italy and in England. There is construction proceeding, rather substantial construction.

Mrs. HUNTER. Thank you, Mr. Chairman.

Mr. STRATTON. Could you supply for the record in unclassified form the response for the selection of the ABRV warhead for the MX?

Dr. WAGNER. Let me think for a minute whether I can do it in unclassified form. I think that I can. The central considerations are that——

Mr. KLEIN. Just put it on a piece of paper.

Dr. WAGNER. Yes; of course, I can.

Mr. KLEIN. The reason, Dr. Wagner, is that the people on either side of this issue, external to the Department of Defense, are supplying responses and arguments in what I presume to be unclassified form.

Dr. WAGNER. We have about a two-page unclassified statement and I don't happen to have it with me, and I will get it to you.

Mr. KLEIN. But the committee has received no similar unclassified information. We have a lot of classified information on the subject from the Department.

Dr. WAGNER. We will certainly do that.

[The following information was received for the record:]

POINT PAPER ON MX REENTRY VEHICLE DECISION.

Background: Following a comprehensive one-year review, which was completed during the fiscal year 1983 budget process, the DoD selected the ABRV over the MK12A as the reentry vehicle for MX.

Rationale for the decision: Selection of the ABRV was based on the following considerations:

The ABRV is an advanced technology reentry vehicle with an improved fuze, improved accuracy, enhanced all weather performance, and increased hardness against nuclear weapon effects.

The ABRV warhead as the growth potential for a higher yield which provides an important hedge against future Soviet hardening initiatives as well as a hedge against MX system accuracy which will not be validated until flight testing is initiated in 1983.

Since the MK12A is currently being retrofitted onto a significant portion of the MM III force, deployment of ABRV on MX will provide an important element of diversity and advanced capabilities in the MIRVed ICBM force.

The ABRV warhead will incorporate all the modern safety features which will reduce even further the already very small chances of a nuclear accident. This is particularly important since mobile basing options for MX remain under consideration.

The ABRV warhead will use significantly less nuclear materials than the MK12A warhead at any equivalent yield.

Cost: The total incremental cost to DoD in changing the MX reentry vehicle baseline from the MK12A to the ABRV is $881M (fiscal year 1982 $). However, since an upgraded fuze (at a cost of $259M) would have been required for the MK12A, the actual net cost to the DoD is $622M. Moreover, at the current yield of the MK12A, the ABRV saves sufficient nuclear material to largely offset the additional cost to the DoD. Thus, the net cost to the nation is expected to be small, and the MX will have a significantly improved military capability and flexibility.

Schedule: The DoD and DoE have initiated a joint development program for the ABRV and its warhead which is characterized by low technical risk and moderate schedule risk. However, both DoD and DoE believe that the schedule risk is manageable and given timely Congressional funding support have high confidence that the ABRV will meet the late 1986 MX IOC.

Fact clarification: Recent articles in the press and certain information provided to Congressional committees by the MK12A contractor reflect a general misunderstanding of the ABRV decision and are based, in some cases, on a distortion of facts. The following points are provided to clarify the facts:

The ABRV is *not* a "paper design". It has been under advanced development for over five years and successfully flight tested three times.

The current plans are to deploy the ABRV at a reduced yield about equivalent to the yield of the MK12A. This yield was selected based on a balanced consideration of target base hardness, expected MX system accuracy and required damage potential. The yield more than adequately satisfies military requirements. The key point is that, unlike the MK12A warhead, the ABRV warhead has the flexibility to provide a much higher yield, if such a yield is later deemed necessary. The decision to baseline the lower yield was not in any way driven by nuclear material considerations. Nevertheless, it is true that at any equivalent yield the ABRV warhead uses substantially less nuclear material.

The MX will not be required to carry fewer reentry vehicles with the ABRV than with the MK12A. Current plans are to load the MX with 10 reentry vehicles. However, if desired, the MX reentry system could easily accommodate 11 ABRVs and, with some modification, even 12 ABRVs.

Although the ABRV weighs about 33 pounds more than a comparably equipped MK12A, the range and footprinting capability of the MX system is more than adequate even at a loading of 12 ABRVs.

From a military effectiveness standpoint, there are legitimate differences in opinion over the value of the added capability provided by the ABRV. These differences of opinion are primarily due to differences in assumptions used to analyze the military effectiveness of the MX system. While the DoD acknowledges these differences of opinion, it believes that there is no question that the ABRV is markedly superior to the MK12A.

Nuclear testing of the ABRV warhead has been completed, and the DoE is certain that it will be able to certify the warhead performance with high confidence.

The ABRV will not cost the nation $1B. The actual cost may very well be negligible. (See above.)

Engineering development of the ABRV has been awarded to AVCO on a sole source basis in order to facilitate meeting the MX IOC. However, it is important to note that AVCO did win the competition for advanced development of the ABRV when that contract was awarded over five years ago.

Assuming timely Congressional funding support, the DoD and DoE are confident that ABRV *will* be able to meet the MX IOC.

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Air Force support for the original MK12A baseline was based almost entirely on cost and schedule risk concerns. These concerns were resolved during the fiscal year 1983 budget review process, and the Air Force supported the final DoD decision for the ABRV. The Air Force did not reclaim the DoD decision.

CINC SAC has consistently advocated selection of ABRV for MX.

[The following questions were submitted to the witness to be answered for the record:]

Mr. STRATTON. The GAO seems to recommend that only one type of vehicle be procured to tow the Pershing II system. They say that the logical choice would be a German vehicle that is to be deployed with Pershing II in Europe. Does this make sense? Is there that much difference in training soldiers to drive a 10-ton U.S. truck in training in the United States to transition into a German vehicle in the NATO theater?

Colonel FIORENTINO. In January 1982 the Army reviewed the plan to procure two types of trucks to pull the PERSHING II Erector-Launcher and decided to continue with it. It is our assessment that few training difficulties will be incurred by having the HEMTT 10-ton truck for the CONUS PERSHING unit and the M.A.N. 10-ton truck for the units in Europe. These problems are not considered difficult to overcome and are well within the capability of the Army to accommodate.

Mr. STRATTON. Colonel, the General Accounting Office has also stated that cost savings could be made if the Army did not acquire reference scene generation facilities to deploy with each Pershing II battery. What is the purpose of these facilities? If the Army acquires these facilities, will they be useful [deleted]. What would be the additional cost involved if the procurement of these facilities were deferred?

Colonel FIORENTINO. The Reference Scene Generation Facility [RSGF] consists of computer equipment which will be used in the field to generate terminal guidance reference scenes of short notice targets for which preplanned reference scenes are not available. The RSGF is contained within a modified S-280 shelter mounted on a 5-ton truck. The RSGF will use an Operational Data Base (ODB) which is stored in the facility to generate these reference scenes. The Defense Mapping Agency [DMA] has discovered [deleted].

The cost of deferring procurement of the RSGFs until 1987 is estimated to be about $19 million.

Mr. STRATTON. Colonel, the GAO has said that the Pershing II operational use will be greatly restructured when initially deployed because of [deleted]. Will this discrepancy be satisfactorily resolved by the time the Pershing II is deployed or when this system reaches full operational capability?

Colonel FIORENTINO. The PERSHING II operational use will not be restructured at all. The system will operate as always planned. The only difference will be that [deleted]. However, the user will have an indication of the expected system performance and could [deleted].

In addition to correcting the data base, the Defense Mapping Agency is producing "hand-crafted" reference scenes for use against Supreme Allied Commander, Europe (SACEUR) high priority preplanned targets. At least [deleted] of these scenes will be available when the first nine launchers are deployed in December 1983. As long as they are needed, the Defense Mapping Agency will provide annually [deleted] reference scenes of critical targets selected by SACEUR. These reference scenes will permit PERSHING II to be effectively targeted with full system accuracy against a wide variety and large number of high priority targets.

Mr. STRATTON. Colonel Fiorentino, the GAO has alleged that testing of the Pershing II system is insufficient to support a production decision. The Army apparently considers the test program to be successful. Would you comment on the test program to date and explain why the testing program now supports a production decision of 91 missiles? I would like for you to concentrate on the matters mentioned in the GAO report of February 22, 1982.

Colonel FIORENTINO. The Army's approach, while not risk free, is prudent. The GAO's concerns are a result of the concurrency which the program has been structured to accommodate. For example, the advanced development program verified the soundness of the area correlative technique by captive flight tests and actual missile flights. The Engineering Development program is expanding this data base with significantly more captive flights before the production decision. The captive flights are currently underway and the results to date indicate that the system will meet its accuracy requirement. On the other hand, the extended range capability was not demonstrated during the Advanced Development program. Therefore, the maximum range firings, which require an overwater range, are the highest risk tests. By doing them first, we can either have the maximum time to solve any prob-

lems which arise or have the earliest possible signal that an unsolvable technical problem has arisen which requires cancellation of the program. Testing of the Reference Scene Generation Facility [RSGF] has already begun and results show the hardware is capable of producing reference scenes of proper quality. Soldiers are now being trained to operate this equipment and they will produce the scene which will be flown against the target area in captive flight tests and the early missile flights. Operational testing of a full set of equipment has been moved forward to as early a point in time as possible and will begin in July 1982. The ECM capability of the system was thoroughly tested during Advance Development captive flight tests and will also be checked against in Engineering Development prior to the production decision. These results will be verified by later missile firings. The tests that will not be completed prior to the production decision have been restructured to examine the critical elements at the beginning of the test. These critical results will be available prior to the production decision.

Mr. STRATTON. The Army plans to purchase two types of TOW vehicles for the Pershing II missile launcher. Will this involve *additional* support and training costs?

Colonel FIORENTINO. It is the Army's assessment that no significant logistics problems will be encountered by deployment of two models of 10-ton truck (M.A.N. and HEMTT) to tow the PERSHING II launcher. The HEMTT truck will be deployed worldwide to support a variety of Army requirements such as MLRS, PATRIOT and DIVAD Gun, as well as regular unit ammunition and fuel transportation requirements. This worldwide deployment results in a normal package of full logistics support in the Army. The M.A.N. truck, intended for European deployment in support of PII, will be supported logistically by Army organizational and direct support maintenance with higher levels of support maintenance provided by the contractor through his extensive network of facilities. This system is in place and in use by the German army and guaranteed support is assured by virtue of an agreement between the US and Germany. Some increase is foreseen in training requirements, but this problem is not considered to be difficult or costly to overcome and is well within the capability of the Army to accommodate.

Mr. STRATTON. I notice that the GAO report states that they did not request comments on the report before it was issued from the Department of Defense, but they did, however, "discuss a draft of this report with high-level officials associated with the management of the program and they agreed with the facts presented." Now I ask you, Colonel Fiorentino and Dr. Wagner, did the GAO discuss this report with you and did you agree with the facts presented? Do you agree with the conclusions drawn from those facts? Do you agree with the recommendations, and if so, why?

Colonel FIORENTINO. The draft report was discussed with me. However, I did not review the final reports with them. From a factual point of view the report is reasonably correct. I do not agree with the conclusions drawn from those facts or with the recommendations. Nor does the Army. Each of the recommendations has been addressed and after careful review, the Army did not agree with them for the following reasons:

a. Delay of Production Decision. On December 12, 1981 a special Army Systems Acquisition Review Council (ASARC) was convened to examine this question. A determination was made that it was not possible to delay the production decision until completion of an overland flight without putting the critical IOC at risk. This is because of the exising long production lead times necessary to provide hardware in time to met the IOC. Nor could the test program be accelerated or modified to provide for earlier overland flights because of scheduing and hardware availability constraints.

b. Defer acquisition of Reference Scene Generation Facility (RSGF). In addition to providing reference scenes for preplanned targets, DMA will also furnish an interim data base which will provide an indication of system performance. [Deleted.] It should be noted that even the [Deleted].

c. M.A.N. trucks for the Continental United States (CONUS) PERSHING unit.

(1) The Army originally planned to field PERSHING II with the Heavy Expanded Mobility Tactical Truck (HEMTT) 10 ton truck. However, due to Congressional funding cuts, that program could no longer support the PERSHING II schedule requirements. Therefore, the Army, with Congressional approval, contracted with the M.A.N. company for 10 ton trucks which can meet the PERSHING II schedule. However, since the HEMTT program could meet the schedule for the fielding of the CONUS battalion, the Army sought to minimize the number of M.A.N. trucks in the inventory by deploying the HEMITT truck with the CONUS battalion. Subsequent to a DA staff review in January 1982, the Vice Chief of Staff, Army reaffirmed the two truck decision.

(2) It is the Army's assessment that no significant logistics problems wil be encountered by deployment of two models of 10 ton truck (M.A.N. and HEMTT). The HEMTT truck will be deployed worldwide to support a variety of Army requirements such as Multiple Launch Rocket (MLRS), Patriot and Divad Gun, as well as regular unit ammunition and fuel transportation requirements. This worldwide deployment results in a normal package of full logistics support in the Army. The M.A.N. truck intended for European deployment in support of PII, will be supported logistically by Army organizational and direct support maintenance with higher levels of support maintenance provided by the contractor through his extensive network of facilities. This system is in place and in use by the German Army and guaranteed support is assured by virtue of an agreement between the U.S. and Germany. Some increase is foreseen in training requirements, but this problem is not considered to be difficult to overcome and is well within the capability of the Army to accommodate.

Mr. STRATTON. The General Accounting Office has recommended that production should be delayed for up to four months to allow time for future testing and evaluation of the guidance system. How would this four-month delay affect the IOC of the system, the achievement of full operating capability, and the costs of the program?

Colonel FIORENTINO. A four month delay would also delay both the IOC and FOC by four months. We estimate the costs of such a delay would be approximately $20 million. This cost does not include the effects of inflation which we estimate to be approximately $50 million.

Mr. STRATTON. Dr. Wagner, what is the general condition of Pershing I missiles now deployed in NATO with respect to age, reliability, accuracy, safety, and security? Isn't it necessary to modernize this weapon system notwithstanding the NATO agreement?

Were the Pershing I and Pershing II systems designed only for NATO use?

Dr. WAGNER. Aside from improved performance and our commitment to NATO, a most compelling rationale for replacing Pershing Ia with Pershing II is that Pershing Ia is an old system using old technology which is becoming increasingly more difficult and costly to maintain. Today, the excellent system's reliability and accuracy of Pershing Ia is being maintained at considerable effort and cost and could not be continued into the outyears without a comprehensive remanufacture program. While we have not had any safety and security problems with Pershing Ia, Pershing II is being designed to be safer and more secure.

The Pershing system, including PII, is designed for worldwide use not including Arctic and Antarctic areas.

Mr. STRATTON. The Pershing II IOC (Initial Operating Capability) in NATO appears to be merely symbolic. The deployment of one or two fire units is not likely to get the Russian's attention.

How important is it that we achieve a full operational capability within a relatively short period of time?

Dr. WAGNER. Maintaining the Alliance's plans for pershing deployment demonstrates the continued U.S. commitment and shows NATO's resolve to fully implement the 1979 ministerial decision. In addition, it provides SACEUR with enhanced military effectiveness and the capability to deter a Soviet attack on NATO by holding targets in the Soviet Union at risk.

Equally important, if the U.S. were to make any changes in deployment schedules at this juncture, we would be sending the wrong signals to the Soviet Union. Delaying Pershing deployments would be seen by the Soviets as the beginning of U.S. backsliding on the program and indicate to them that their political and propaganda efforts in Europe are paying off.

Any decision to stretch out Pershing II or GLCM would also undermine our negotiating position at Geneva. Our best guarantee that the Soviets will negotiate seriously is to proceed with the Pershing II and GLCM programs as planned.

Question. Dr. Wagner, are their other, non-nuclear mission for the Pershing II and GLCM? Wouldn't it be a good idea to deploy these systems even if the Soviets were to accept the President's arms reduction proposals?

Answer. The Pershing II and GLCM missile systems are planned for deployment as nuclear systems as agreed in NATO in 1979. There are no current plans to provide these systems with non-nuclear armaments. If accepted by the Soviets, the President's proposal to cancel the deployment of Pershing II and GLCM if, the Soviets agree to dismantle their SS-20, SS-4 and SS-5 missile systems would significantly enhance US and NATO security.

Theater Nuclear Forces

Question. Dr. Wagner, on page 6, you indicate that once the Pershing II and GLCM systems are initially deployed (IOC), we still face a difficult challenge—that of *completing* the full range of long range TNF (theater nuclear force) deployments *on schedule.* What exactly is the "challenge" to which you refer? Is it the production schedule? Political? Or due to fiscal constraints?

Answer. The challenge to which I refer is ensuring not only that production of Pershing II and GLCM proceeds on schedule, but also that we complete preparations in Europe on time to base these missiles, all of which will require continuing Congressional support for funding hardware procurement and US facilities construction in Europe.

Soviet "Moratorium"

Question. In Wednesday's Washington Post, the President is quoted (speech in Oklahoma) as repeating his offer to forego the deployment of PERSHING II's and GLCM's in Europe if the Soviets would "dismantle Europe-based nuclear missiles."

It appears that the President's offer may be just as dangerous as the Soviet offer of a nuclear "freeze" in Europe. In the one case, we would partially disarm while the Soviets could still target all of Europe from Asia (East of the Urals). In the other case, we would simply "freeze" the fact of Soviet nuclear superiority.

What advantages are there for NATO under either arrangement?

Answer. The US draft treaty tabled in the Intermediate-Range Nuclear Forces (INF) negotiations in Geneva embodies President Reagan's bold proposal, first announced in his November 18 speech, to cancel our deployment of Pershing II and gound-launched cruise missiles in return for the elimination of Soviet SS–20, SS–4 and SS–5 missile *worldwide.* It thus eliminates the forces of most concern to both sides.

President Brezhnev's "moratorium" is limited to the European Soviet Union, thus leaving the USSR free to continue its SS–20 build-up east of the Urals, well within range of Western Europe. As we have noted on many occasions, given its range and mobility, and SS–20 is a threat to NATO wherever located.

We see no advantage for NATO in the Brezhnev moratorium statement; it would in fact be detrimental to NATO security and to our position in the INF negotiations. Like previous such freeze proposals, this one seeks to perpetuate Soviet superiority, to leave the Soviet Union free to continue its buildup, to divide the NATO Alliance, and to stop US deployments of GLCM and Pershing II.

Force Imbalance

Question. Dr. Wagner, on page 4, you make a good case that the Russians have an overwhelming advantage over NATO in long-range warheads. As I understand, the advantage today is overwhelmingly in the Russian's favor, GLCM and the Pershing II will not make a dent in this adverse balance.

In view of this imbalance, what are the advantages of a freeze on nuclear weapons while negotiations are going on? What are the disadvantages? Would this not simply freeze NATO into the present inferior position?

Answer. While NATO currently has no long-range INF missiles deployed the Soviets have some 300 mobile SS–20 missiles with 900 warheads, as well as 300 SS–4 and SS–5 missiles, for a total of 1200 long-range INF warheads.

In addition, there is evidence that SS–20 site construction already underway in the European USSR has continued since March 16, when Presient Brezhnev announced a moratorium on futher deployments of SS–20s in the European part of the USSR.

In view of the existing Soviet monopoly in INF missiles, the Soviets would have no incentire to negotiate limits on their forces unless NATO proceeds toward deployment of its own systems. It was as a result of NATO's demonstrated resolve to modernize its INF that the Soviet Union was persuaded to negotiate in Geneva.

A freeze that would preclude NATO's deployment would doom chances for a successful outcome of the Geneva negotiations and an equitable and balanced arms control agreement.

Linkage

Question. Dr. Wagner, you state, on page 3, that the SS–20 and other Soviet initiatives threaten the "credibility of the linkage between European-based nuclear forces and the U.S. strategic deterent." Just what is the linkage between European based

nuclear forces and U.S. strategic forces? How will the deployment of Pershing II and GLCM strengthen that linkage?

Answer. Maintaining a strong linkage or coupling betwen each leg of NATO's triad of forces—conventional, European-based nuclear, and US strategic nuclear forces—is essential to preserving the credibility of the Alliance's deterrence force posture. The "linkage" between European-based nuclear forces and US strategic nuclear forces is the broad range of escalation options available to NATO between battlefield use and US employment of its strategic nuclear weapons, the ultimate deterrent against attacks on NATO. Deploying GLCM and Pershing II reduces the risk that the Soviets might believe, given their massive deployment of SS-20 ballistic missiles, that they could use long-range forces to make or threaten limited strikes against Western Europe from a sanctuary in the Soviet Union. Deployment of GLCM and Pershing II gives NATO a land-based missile capability of its own to reach Soviet territory, thereby strengthening the linkage between European-based and US strategic forces by providing a credible and appropriate means of response to the threat posed by Soviet SS-20 deployments.

Mr. STRATTON. Thank you very much, gentlemen, and we had better go ahead with air defense.

The committee will continue its deliberations now on the Army's air defense program, and our leadoff witness will be General Maloney again.

Will you provide the committee with an update of the Army's long-range air defense plan and an overview of major air defense systems?

The committee is particularly interested in reviewing the status of three major air-defense programs—the Patriot missile system; the division air defense [DIVAD], gun system; and the Stinger missile system.

The Patriot missile system is the backbone of the Army's effort to modernize its air defense inventory. The Army's recent decision to increase the number of launchers for each fire unit from five to eight represents a significant departure from previous plans. The committee is interested in hearing the Army rationale for expanding the number of launchers and the cost implications of that decision.

The committee is concerned that although the fiscal year 1982 appropriation provided $670 million for the Army to procure nine fire units and 244 missiles, the Army only plans to buy 176 missiles and nine fire units. The committee is interested in hearing the Army's reason for reducing the fiscal year 1982 buy to 176 missiles.

The committee is concerned about the problems that the Stinger-POST [passive optical seeker technique] missile is experiencing. I understand that the Army has asked for $42.5 million to fund 44 Stinger-POST missiles in fiscal year 1983. Before approving the Army's request, the committee would like to insure that the problems experienced by the Stinger-POST missile have been resolved.

The Army has established its inventory objectives for Stinger missiles at over 9,000. It is my understanding, however, that the Army has decided not to develop a second source for the Stinger because it is too costly. It would appear that with close to 90,000 missiles still to be purchased, some savings could be realized through second sourcing. The committee would like the Army to explain its decision not to use second sourcing.

The division air defense, DIVAD, gun is one of the Army's major new acquisitions and it has recently completed a series of performance tests. I understand that the tests indicated that improvements

in armament reliability and IFF [Identification, friend or foe] capabilities are still needed.

Our witnesses should be prepared to discuss these problems and proposed solutions.

In addition to General Maloney, our other witnesses are Brig. Gen. Jerry Bunyard, program manager for Patriot missile system; Col. Charles Adsit, program manager for the DIVAD gun; and Col. James Rambo, program manager for the Stinger.

I will yield now to Mrs. Holt—and, General Maloney, your statement is of a classified nature so we are remaining in executive session.

Mrs. HOLT. Mr. Chairman, I have no opening statement to make, but I will have a short statement that I would like to have placed in the record.

Mr. STRATTON. That will be placed in the record.

WRITTEN STATEMENT OF HON. MARJORIE S. HOLT, A REPRESENTATIVE FROM MARYLAND

Thank you, Mr. Chairman. As you know, the Army has requested $2.8 billion for missile procurement and almost $600 million for the DIVAD Gun this year. This means that the fiscal year 1983 budget requested to support air defense programs is $3.4 billion which is an increase over fiscal year 1982 of $1.0 billion. This increase reflects the fact that the major air defense programs are beginning transition into full rate production.

As you know, Mr. Chairman, in recent years this committee has argued rather forcefully for improvements in Army air defense, and I am pleased that our efforts are beginning to show tangible results.

Mr. Chairman, I realize that you are anxious to get started. Thank you.

WRITTEN STATEMENT OF MAJ. GEN. JAMES P. MALONEY

Mr. Chairman, ladies and gentlemen, I am here to provide you with an overview of the Army Air Defense Program Plan 92. This is an annual update of the Army's long-range plan for air defense which has been provided to Congress for the past two years. The plan reflects the significant changes which have occurred since last year. I'll highlight these changes during the briefing.

Our program plan results from annual competition with other important Army programs for dollars and manpower spaces. The investment costs are relatively moderate. In terms of manpower, Army Air Defense consists of only 5.9 percent of our force structure. The costs to modernize that force represents 11 percent of the Army's procurement budget. The program represents the minimum base line at which the Army can be an effective contributor to an integrated Air Defense Force.

This is a snapshot of today's Air Defense Force and the future program force toward which we plan to evolve.

I know that you are familiar with the threat, so I'll move quickly through this area. I'll then discuss why we need a family of weapons to perform the air defense mission. I will outline the fiscal year 1983 program and I will cover the differences between this year's request and the projection, I presented to you last year. I will ask the project managers to cover several programs; then, I'll wrap up the briefing with the transition of these systems into the force structure.

Now, let's begin with the threat.

The threat increases significantly over the next several years. Our projection for Central Europe shows that while numbers of fixed-wing aircraft remain relatively the same, the quality goes up in terms of range, increased payloads, ordnance sophistication and all-weather capability. [Deleted.] The Soviets have always placed emphasis on electronic countermeasures. Their present program of developing dedicated ECM support aircraft is expected to continue. They also appear to be placing increased emphasis on equipping strike aircraft with self protection ECM systems. The Soviets are getting much better in the close air support arena.

[Deleted.]

The introduction of combat and assault helicopters has significantly increased the Soviet's ability to project air power. Over the next 10 years the number of the assault helicopters will increase [deleted] and the attack helicopters will [deleted]

equally impressive is their production rate. HIND will be produced at a rate [deleted] per year.

The HIP production rate will reach [deleted] per year. The Soviet emphasis on helicopters can be seen in the introduction of attack helicopter regiments, helicopter transport regiments, and air assault brigades.

By [deleted] we expect them to introduce a new follow on attack helicopter.

Of particular concern to us, is the increasingly sophisticated tactical missile threat to our forces. The evolution is Soviet tactical missiles has been toward better accuracy. [Deleted] and they are developing new missiles to fill mission needs from division level through theater and national levels. We must respond to this.

This, then, is the air threat, increasing in quantity and quality. Here are the capabilities we need to defend against the Soviet threat. We achieve these capabilities with an air defense family of individual contributing members that compensate for each other's limitations and reinforce each other's strengths. Systems like Stinger provide company sized elements with a self defense capability against attacking aircraft and supplement the defense of such things as supply points. The division air defense (DIVAD) gun is the best weapon for protection of mechanized and armored forces. Short range SAM's like Chaparral have a high single-shot effectiveness and longer range than the gun; but their reaction time is slower than the gun and they are also vulnerable to enemy fire. They protect high value assets in the division, corps and theater rear areas. To counter the enemy's capability to attack our forces from standoff ranges and to fly at altitudes above the capabilities of short-range air defense weapons, the air defense family must be balanced with high to medium surface-to-air weapons like I-Hawk and Patriot and air-to-air interceptors. This balanced family of air defense weapons preempts the enemy's "best attack" option.

Let's look at what we have today, and what we require for the future. We'll begin with those weapons that are man-portable.

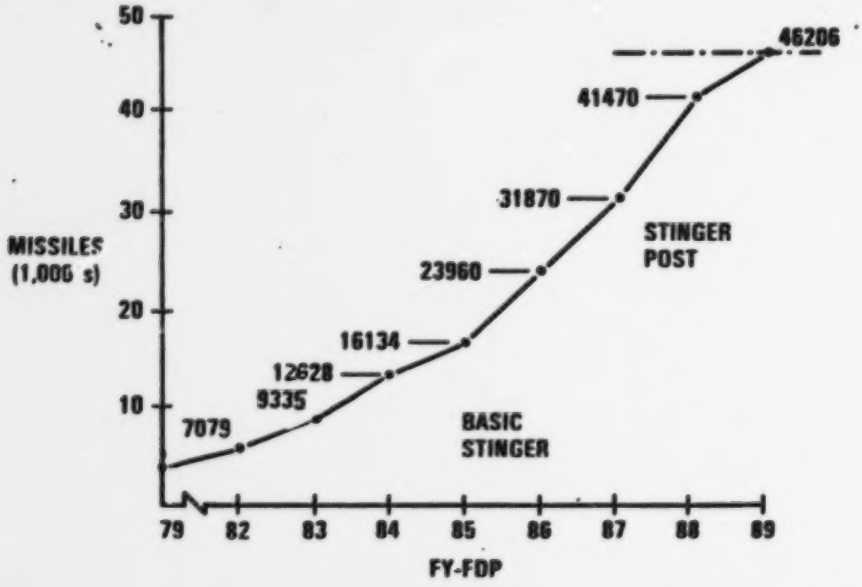
Redeye is a first generation infrared, heat-seeking missile, which we began fielding in 1966. It has been a good weapon, but has out-lived its time. As you can see here, Redeye has significantly limitations. Our plan is to completely phase Redeye out of the inventory.

We began fiscal year 1982 with over [deleted] still equipped with Redeye. A team consists of two men equipped with a jeep, trailer and six missiles. There are approximately [deleted] teams in each division. Redeye teams are also found in armored cavalry regiments, field artillery brigades, and air defense units.

Stinger is the replacement system for Redeye. We are procuring it for both Active and Reserve component forces. It is capable of forward engagements and is effective against all known threats today. We are developing a new seeker, known as Post, that will enable Stinger to resist advances that the Soviets are making in infrared flare countermeasures. It is the first new air defense weapon to enter the force since 1969. The fiscal year 1983 budget procures basic missiles with ground support equipment for approximately 300 teams. This equipment will support the continued fielding of Stinger to our Active forces in Europe. We will also begin the low-rate initial production of Stinger-Post.

We began fielding Stinger, in Europe during February 1981. Over 300 teams will be fielded by the end of this fiscal yer. The program force for Stinger consists of [deleted] which includes both Active and Reserve component forces. This represents a 90-team reduction from last year's program force and is based on minor shifts in the total Army force structure. During fiscal year 1986 we will begin modernization of the Reserve components with Stinger. Fielding will be complete by the end of fiscal year 1990. By that time we plan to have fielded [deleted] for the reserves.

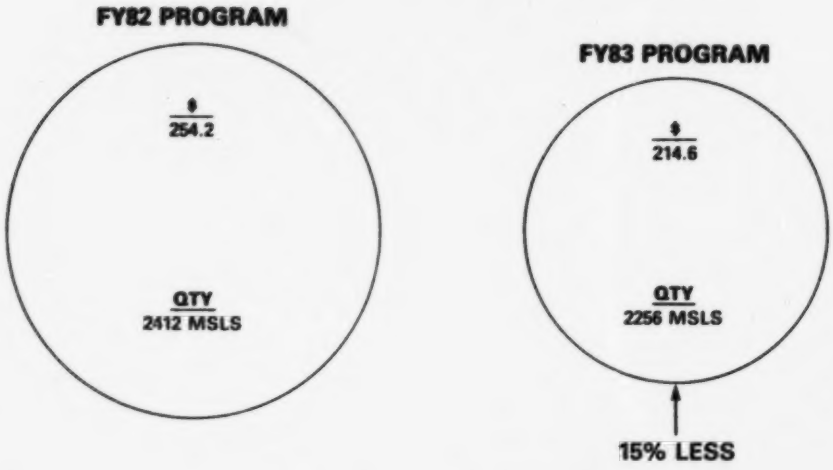
STINGER PROCUREMENT OBJECTIVE



The chart on your left indicates the missile procurement objective. This year's request will bring out total procurement to 9335 missiles which includes 44 Stinger-Post missiles.

We are completing the contractor flight test program of Stinger Post. Seven of ten test missiles have been fired, three of these were hits. The seven firings demonstrated the Post design. Some technical difficulties were encountered; the solutions to these problems have been identified, they were tested in the Post simulation model and will be verified with the remaining three missiles in this series. A Government flight test program consisting of 16 missiles will begin in April.

STINGER PROCUREMENT HIGHLIGHTS:
THE FY83 REQUEST IN THE...



The chart on the right shows the difference between the fiscal year 1983 projection that we gave you last year and this year's fiscal year 1983 program request. The cost reduction in this year's program is a result of elimination of the second source, which was determined to be too costly for the total number of Stingers to be produced, and the delay of post production from fiscal year 1982 until fiscal year 1983. As you can see, this resulted in 156 fewer missiles being procured this year. Consequently, this year's request is 15 percent below the figure we projected last year. Unit cost in fiscal year 1983 is only 5 percent higher than fiscal year 1982. This is due to a combination of inflation rate and learning curve effects.

STINGER-FINANCIAL SUMMARY

[Dollars in millions]

	Fiscal year—				To complete	Total
	1981 and prior	1982	1983	1984		
RDT & E	$200.9	$16.1				$217.0
Weapon System Procurement	$293.7	$193.8	$214.6	$258.3	$2,618.2	$3,578.6
Quantity buy	4,535	2,544	2,256	3,293	33,578	46,206

Col. Rambo the Stinger project manager will cover some specifics of the program.

The next category of weapons is short range air defense systems. I'll begin by starting with the gun systems.

Vulcan is our current Shorad gun. It is configured on either a modified personnel carrier or on a towed mount. As shown here, the Vulcan system has significant limitations. We fielded Vulcan in the mid sixties, during the Vietnam War, when we began to perceive that the Soviets were developing a close air support capability. The helicopter threat was not visualized at that time. In previous years we considered product improvements for the towed Vulcans in the airborne, air assault, and light infantry divisions. However, the proposed improvements did not provide a sufficient increase in effectiveness. Consequently, no improvements are programmed.

We've long recognized that we must replace Vulcan. We need a light air defense weapon as a replacement for the towed Vulcan.

LIGHT AD WEAPON CAPABILITIES

Effective both day and night.
Rapid reaction fire control.
Complementary optical sight.
On-board identification system.
Highly mobile.
Tactical airlift transportability.

This is what we need. The major system new start could be a gun or a missile system. A light air defense force structure study will begin this summer at the U.S. Army Air Defense School. The study will consider several alternatives for a Lads. This study is scheduled to be completed in early fiscal year 1983.

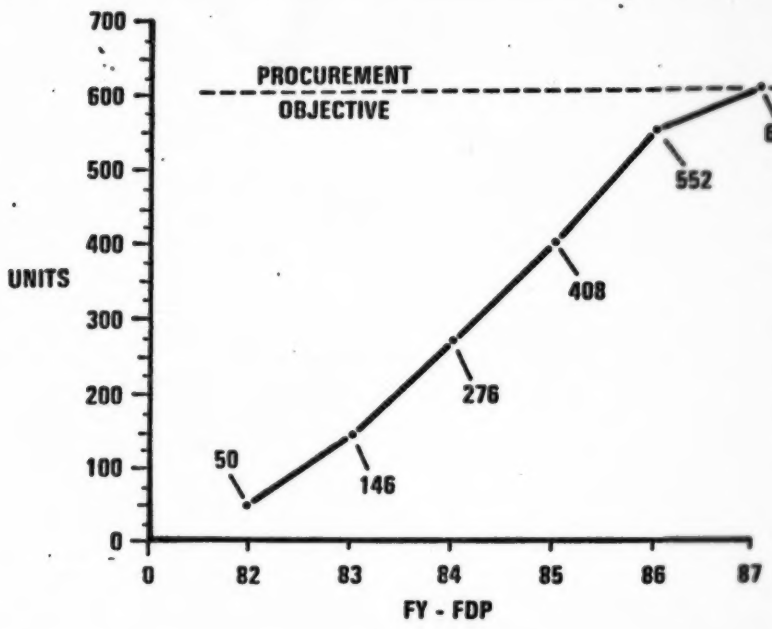
Today, we have 39 batteries of Vulcan. This force is a mix consisting of both self-propelled and towed Vulcan. We will maintain the current Vulcan force level until fiscal year 1985 when we begin fielding the Divad gun for the heavy divisions. By the end of fiscal year 1988, Vulcan will have been replaced in the heavy divisions. The Vulcan force will then be reduced to the 17 batteries remaining in the non-divisional Shorad battalions the airborne, the airmobile, and the light infantry divisions. By fiscal year 1987 we hope to begin fielding Lads as the replacement system for the towed Vulcan.

The division air defense gun will be the replacement for Vulcan in the eleven heavy divisions. It has been designed to counter the HIND, the HIP, the ground support fighter and other close air support aircraft. It is a self-propelled twin 40mm gun with digital fire control and a radar, mounted in an armor turret on a modified tank chassis. It provides a fast reacting, highly mobile air defense weapon to protect forward combat elements. Our 1983 program includes funds for procurement of 96 guns and for completion of system development.

This chart shows the transition of Divad into the force. There has also been an additional Divad requirement identified by the Army 86 studies for the corps and the armored calvary regiments. This requirement has been approved for planning purposes. Fielding in the heavy division will begin in fiscal year 1985 and is projected for completion by the end of fiscal year 1989. At that time, the remaining batteries in the program will be available for the corps and ACR's

The Divad gun check test was held from November 1981 thru January 1982. The purpose of the test was to verify that the deficiencies noted during the DT/OT II were corrected. The system has successfully completed 11 of 12 performance criteria tests. The only firm requirement which has not been met is IFF performance. We plan to demonstrate the solution to the IFF problem this summer. We did not achieve as high an armament reliability as we had hoped, but the corrections to achieve the desired reliability have been identified and the problems experienced should be corrected this summer. Under the terms of the fixed price contract, the manufacturer must correct these deficiencies at no additional cost to the Government. Divad is now in its second year of production. This year's request will increase the inventory to 146 gun systems.

DIVAD PROCUREMENT OBJECTIVE



This chart represents the Delta from the program we presented to you last year. Divad costs were lowered through contract negotiations which resulted in an 11 percent reduction in the budget request. The Divad gun program acquisition strategy saved the Army a substantial amount of money. By using mature components and an accelerated hands-off development we avoided about 50 percent of estimater R. & D. costs. In addition, the benefits of total competition between Ford Aerospace and General Dynamics reduced the procurement costs of the program by an estimated 25 percent. This translates to about a $750 cost avoidance over the life of the program.

DIVAD GUN—FINANCIAL SUMMARY

[Dollars in millions]

	Fiscal year—					
	1981 and prior	1982	1983	1984	To complete	Total
RDT & E	$185.8	$29.9	$10.9			$226.6
Weapon system process	$138.0	$376.2	$673.9	$747.8	$1,435.2	$3,371.1
Quantity buy		50	96	130	342	618

Col. Adsit, the Divad PM will discuss the remaining highlights in the Divad program.

Eight National Guard 40mm Duster battalions represent the only air defense that we have in today's Reserve component forces. the M42 Duster was fielded in the 1950's.

Our plans to replace Duster in the National Guard have been consistently delayed. These plans have always been dependent upon the availability of Vulcan and Chaparral systems from the active force. Of course, Chaparral/Vulcan phase out has been driven by the availability of the Divad gun and the Roland missile system. The cancellation of Roland has had a ripple effect, and neither phased out active inventory weapons nor increased production of new systems will provide relief

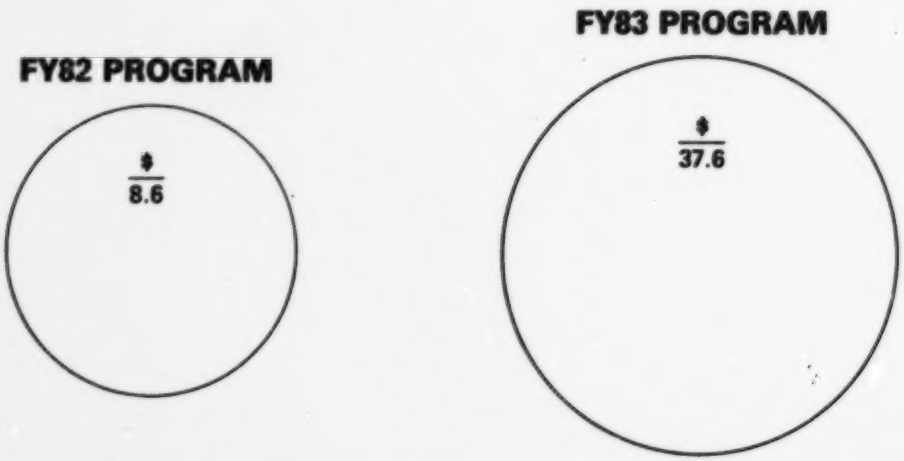
before the mid to late eighties. Our current plan is to provide Vulcan to the Reserves. We are not satisfied with this and are reevaluating options which include Divad, Lads and Chaparral.

Chaparral is the missile component of the Shorad battalion. It has been with us for a long time. It was originally fielded in 1969. We have improved Chaparral and will continue to do so. It will remain in the inventory through the 1990's. The fiscal year 1983 procurement budget will fund night sights, smokeless rocket-motors and upgraded air compressors. The night sight doubles Chaparral's usefulness by providing night and some adverse weather target acquisition capability. With FLIR, Chaparral will be able to operate over 85 percent of the time in the European environment. The original Chaparral rocket motors have now reached shelf life, they are being replaced with a new motor which has a reduced smoke signature. The improved air compressors will increase operational availability. Retention of Chaparral into the 1990's may require a new vehicle. During the past year, over [deleted] of Chaparral's deadline time was attributed to its vehicle. In some months the vehicle was responsible for as much as [deleted] out-of-action time.

As shown, we have [deleted] batteries of Chaparral in the force. Last year I told you that we planned to phase the nine Chaparral batteries into the National Guard.

However, termination of ther Roland program coupled with the recognized deficiencies in corps air defense suggested that we reevaluate the use of our Chaparral assets. For that reason, we are now considering retaining all [deleted] Chaparral batteries for the Active Army.

CHAPARRAL PROCUREMENT HIGHLIGHTS: THE FY83 REQUEST IN THE...



This year's request for Chaparral indicates a $29.0M increase over last year's projection. This increase is to procure the flir and associated equipment for the additional maintenance floats bought last year.

Roland

Fiscal year 1983:	*Millions*
RDT & E request	$0
Weapon system procurement request	61.3

Test and logistics services.
Hardware reconfiguration.
Production engineering services.

[Dollars in millions]

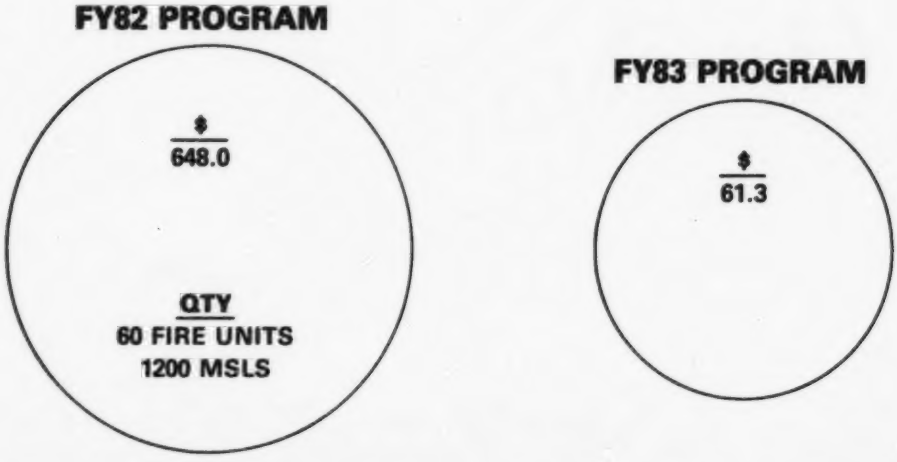
	Fiscal year —				To complete	Total
	1981 & Prior	1982	1983	1984		
RDT & E	$297.9	$0	$0	$0	$0	$297.9
Weapon system procurement	$951.0	$50.6	$61.3	$0	$0	$1,062.9
Quantity buy [1]	27/595	0	0	0	0	27/595
Deliveries [1]	0/22	5/373	10/200	12/0	0/0	27/595

[1] Fire units/missiles.

Roland was cancelled in its third year of production for affordability reasons. The Army felt it had "too much on its plate" for future budgeting. Roland's primary contribution was an all-weather capability. We decided to accept the risk that cancellation entailed. The fiscal year 1983 request includes funds for verification testing to ensure that production hardware conforms to the performance previously demonstrated with prototypes. Reconfiguration will modify early hardware with [deleted] improvements prior to Government acceptance and fielding. Engineering services support current and prior year production activities; these efforts will complete the close out of the U.S. Roland program.

As a result of termination the program was reduced to three batteries. We are now forming these three batteries into a Roland light battalion package for use with the RDF. Training begins in fiscal year 1983 and will be completed the following year.

ROLAND PROCUREMENT HIGHLIGHTS: THE FY83 REQUEST IN THE...



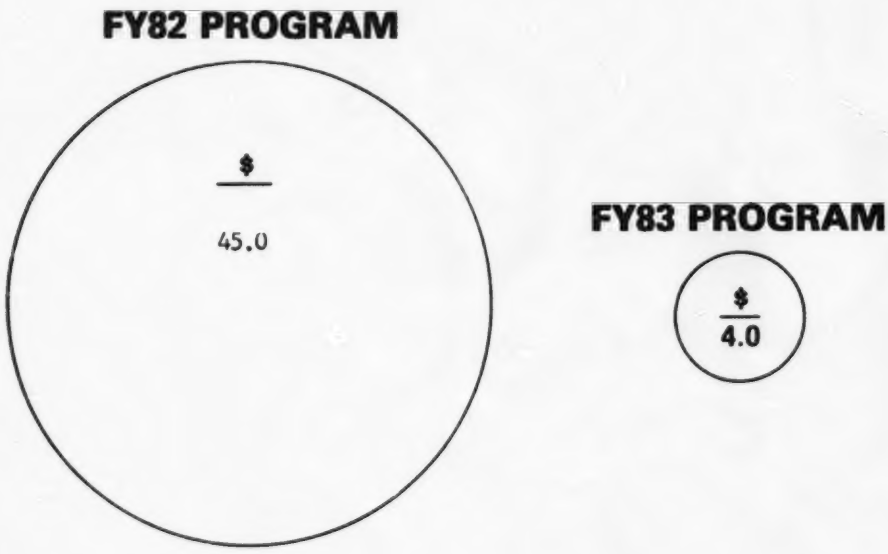
Last year's fiscal year 1983 program projected that we would eventually field 4 battalions. Of course this is no longer possible. Program termination is responsible for the large cost avoidance in the funding levels that are depicted on your right.

Hawk entered the force 22 years ago, it is still our primary low-to-medium altitude air defense system. All of our battery equipment and missile needs were bought in prior years. Hawk has been extensively improved over the years and we plan to continue improvements. One of the planned improvements is low altitude simultaneous Hawk engagements or Lashe. Lashe permits each fire unit to engage as many as [deleted] targets instead of one.

Shown here is the plan for I-Hawk. The last 4 batteries in Korea will be turned over to the Koreans in [deleted] the Army has decided to retain 18 batteries. That is 36 fire units of I-Hawk in the force following the full fielding of Patriot. The two Chaparral/Vulcan battalions will remain in place. The [deleted] I-Hawk batteries along with Chaparral/Vulcan, will defend [deleted] with this force, the air defense coverage is increased, and, with a more capable system. The I-Hawk force is currently being realigned to position the [deleted] batteries in the rear area. [Deleted] batteries are located in the rear area today; [deleted] are being redeployed now and will be positioned by the end of fiscal year 1982; and the last [deleted] will be positioned by the end of [deleted] this I-Hawk force will be providing adequate air defense coverage for more critical assets than previously projected for Roland in the central region rear area. In addition, I-Hawk will provide continued, valuable air defense support for the RDF. [Deleted] I-Hawk batteries will be retained in CONUS for this mission. The current I-Hawk force level will continue to be reduced until [deleted] when there will be [deleted] batteries remaining. This force will be retained indefinitely. The Army is also looking at the possibility of retaining an additional [deleted] to further increase the air defense coverage and protection for the RDF and our critical assets and forces in Central Europe.

No additional procurement costs have been identified with the decision to retain I-Hawk in the force. However, the Army will be considering life extension improvements to reduce manpower requirements, increase firepower, improve mobility and to keep I-Hawk current against the threat of the 1990's.

IHAWK PROCUREMENT HIGHLIGHTS: THE FY83 REQUEST IN THE...



Last year some $45M was planned for procurement of I-Hawk modifications and rocket motors in fiscal year 1983. Of that total, $40.9M was to be used for procuring factory tooling, test equipment, and materiel to support production of a multiple blinking Jammer (MBJ) improvement to the I-Hawk missile and the phase III Pips. But all fiscal year 1983 funds for modifications were deferred to fiscal year 1984. The basis for deferral was: Concurrency between R.D.T. & E. and procurement effort, contract award dates planned for late in the fiscal year (4th quarter fiscal year 1983), and at the time the fiscal year 1983 budget decisions were made, the DOD had not yet made its decision to retain I-Hawk in the force. The fiscal year 1983 procurement request is for rocket motor replacement.

Hercules has been in the force for over 24 years. As shown, it has significant limitations. Probably the most serious limitation is its low rate of fire. A Hercules battery can engage only one aircraft at a time. We have no improvements programed for the Hercules system.

We plan to phase Hercules out by fiscal year 1985. This slide shows where we stand. Delays in fielding Patriot would cause corresponding delays in the phase out of Hercules.

Patriot

Fiscal year 1983:	*Millions*
RDT & E request [1]	$47.1
Weapon system procurement request [2]	881.0

[1] Patriot ECCM enhancement.
[2] 376 missiles—12 fire units.

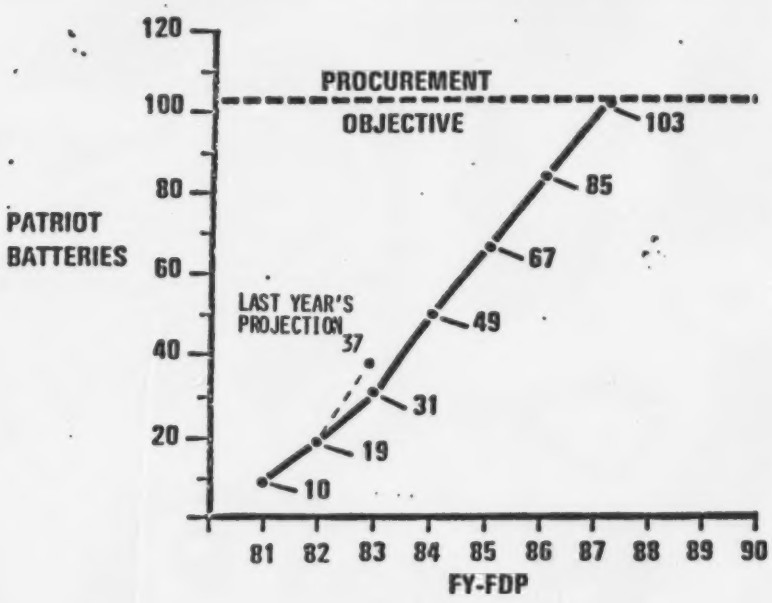
[Dollars in millions]

	Fiscal year—				To complete	Total
	1981 and prior	1982	1983	1984		
RDT & E	$1,860.1	$57.8	$47.1	$86.1	$164.6	$2,215.7
Weapon system procurement	$943.1	$755.1	$881.0	$1,127.4	$4,791.3	$8,497.9
Quantity buy	247/10	176/9	376/12	664/18	4,754/54	6,217/103
Deliveries	0	2	5	12	84	103

Patriot will be the key system in our future ADA family. It is effective at high, medium and low altitudes. It far surpasses the capabilities of our current systems. Patriot will be the key to defeating saturation raids. Each fire unit can track [deleted] targets, conduct [deleted] simultaneous engagements and operate under heavy ECM conditions. Patriot was approved for limited production in fiscal year 1980. The limited production rate in fiscal year 1980 and 1981 allowed us to procure a total of 10 fire units and 247 missiles while conducting confirmation tests to prove out system software, ECM capabilities and reliability. Based on the success of these tests, the Patriot production rate was increased in fiscal year 1982 to 9 fire units and 176 missiles. Our fiscal year 1983 plans are to procure 12 fire units and 376 missiles and to reach the economic production rate of 18 fire units in fiscal year 1984.

The Patriot program reflects a force of 81 batteries. The first battalion will IOC at Fort Bliss in fiscal year 1983. Europe is scheduled to receive its first battalion the [deleted] Patriot fielding is schedules for completion in fiscal year 1990.

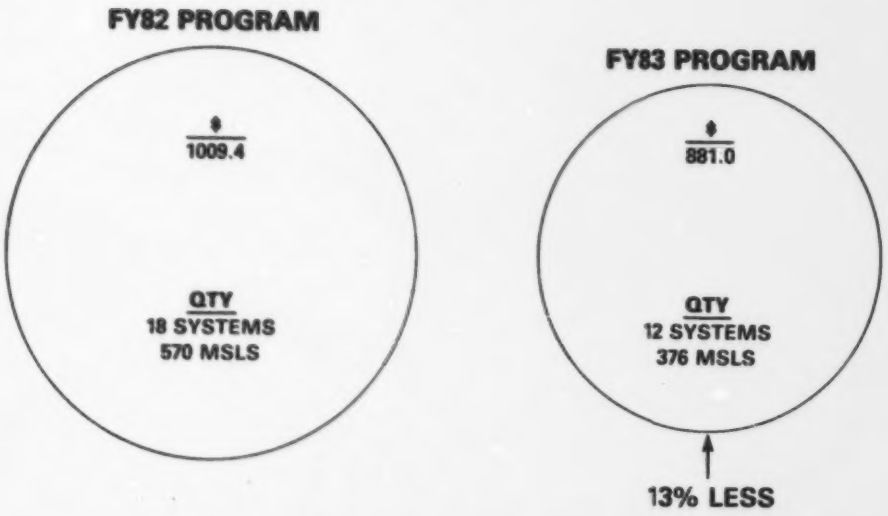
PATRIOT BATTERIES PROCUREMENT OBJECTIVE



These two charts indicate the missile and battery procurement objectives. This year's request will increase the missile inventory to 799 missiles; the number of batteries will increase to 31.

Shown here, is last year's projection for the fiscal year 1983 request.

PATRIOT PROCUREMENT HIGHLIGHTS: THE FY83 REQUEST IN THE...



The program was reduced during our formulation of the fiscal year 1983 budget. As you can see, this year's request is about 13 percent lower than we predicted last year. The larger, approximately 30 percent, reduction in hardware quantities is caused by reductions in the planned production rates in fiscal year 1981 and 1982 along with the added cost for introducing the new maintenance concept.

Last year we assumed the 82 production rate was to be 12 systems and 364 missiles. In fact, due to OSD and congressional reductions it is now only 9 systems and 176 missiles. These earlier reductions require deferrals from fiscal year 1982 to fiscal year 1983 of production hardware and moved us back up the learning curve in fiscal year 1983 thus increasing the fiscal year 1983 unit cost.

PATRIOT—FINANCIAL SUMMARY

[Dollars in millions]

	Fiscal year—				To complete	Total
	1981 and prior	1982	1983	1984		
RDT & E	$1,860.1	$57.8	$47.1	$86.1	$164.6	$2,215.7
Weapon system procurement	$943.1	$755.1	$881.0	$1,127.4	$4,791.3	$8,497.9
Quantity:						
Fire units	10	9	12	18	54	103
Missiles	247	176	376	664	4,754	6,217

Note: 1 unit = 1 fire unit and 64 missiles.

At this time, General Bunyard, the PM will complete the discussion of the Patriot program.

ATM

Millions

Fiscal year 1983:
RDT & E request[1] .....
Weapon system procurement request .....

[1] Initiate near-term technology efforts, long term system concepts.

[Dollars in millions]

	Fiscal year—					
	1981 and prior	1982	1983	1984	To complete	Total
RDT & E		$0	$27.2	$34.5	TBD	TBD
Weapon system procurement						
Quantity buy						
Deliveries						

With this budget we will initiate the base efforts required to define threat vulnerability, evaluate warhear and fuzing concepts to counter the threat and initiate a concept definition program. This program will utilize parallel near term and long term approaches. The near term effort will examine minimum modification of existing Himad systems such as Patriot to provide early ATM capability.

We are working closely with OSD to carefully lay out an ATM program; we anticipate that it may reach the multi-billion dollar level over the life of the acquistion cycle.

Air Force interceptors play a vital role in the family of air defense weapons. The current Air Force interceptor force dedicated to the air defense role consists of the F-4 and the F-15. This highly flexible interceptor force is used in conjunction with our long range air defense systems to provide area air defense and to plug gaps in our coverage as they develop.

The F-16 has begun replacing the F-4, and after 1983 the interceptor force will consist solely of the F-15's and F-16's.

TSQ-73

Fiscal year 1983:	*Millions*
RDT & E request [1]	1.0
System procurement request	0

[1] Completes test and evaluation. Memory PIP.

[Dollars in millions]

	Fiscal year—					
	1981 and prior	1982	1983	1984	To complete	Total
RDT & E	$1.3	$0.5	$1.0		$2.8	$2.8
System procurement				$8.3		$8.3
Quantity buy	26					26
Deliveries						26

Command and control systems are required to integrate the weapons systems I have just discussed and to maximize their effectiveness. In the long range area, we have just completed fielding the TSQ-73 "Missile Minder" system at both battalion and group. This fully automated system has greatly increased our capability to control the fires of the improved Hawk, Hercules and Patriot. We intend to improve the memory of the TSQ-73. [Deleted.]

We are improving Shorad command and control, which currently uses manual plotting boards and voice radio nets. Since last year we have successfully tested improvements to the manual system. We intend as a first step to impove communications. We may then evolve a limited automation system, and go to a full automated approach in several years.

The next graph will wrap up the Army's fiscal year 1983 procurement request.

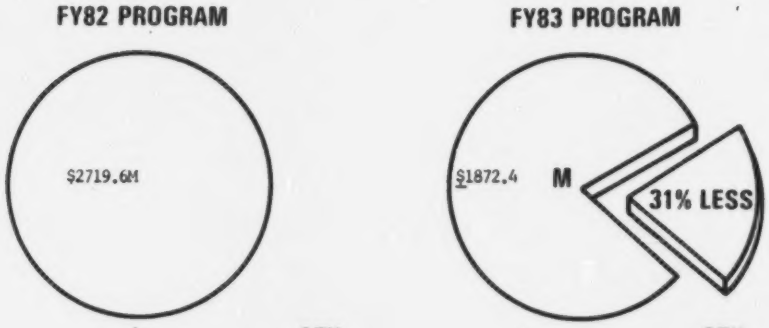
Fiscal year 1983 procurement request (in 1973 millions of dollars)

Patriot—12 systems, 376 missiles	881
Divad—96 guns, 239,000 rounds of ammunition	745
Stinger—Ground support equipment, 2,256 missiles	215
Roland—Program completion	61

Chaparral—FLIR modifications, smokeless motors 38
Other—Vulcan ammo, AD targets, other missile SPT 33

The air defense procurement request buys 376 missiles and 12 fire units for Patriot. The program procures 96 Divad guns and 296,000 rounds of ammunition. It provides 2,256 Stinger missiles with ground support equipment, and also completes the close-out of the U.S. Roland program. The request provides FLIR and motors for Chaparral. Air defense represents 11 percent of the Army's total procurement request.

PROCUREMENT HIGHLIGHTS: THE FY83 REQUEST IN THE.....



	$	QTY	$	QTY
STINGER	254.2	2412 MSLS	214.6	2256 MSLS
DIVAD	754.4	96 GUNS	673.9	96 GUNS
ROLAND	648.0	1200 MSLS	61.3	COMPLETION
PATRIOT	1009.4	18 SYSTEMS 570 MSLS	881.0	12 SYSTEMS 376 MSLS
CHAPARRAL	8.6	MODS, MOTORS	37.6	MODS, MOTORS
I HAWK	45.0	MODS, MOTORS	4.0	MOTORS

This chart show the deltas between the fiscal year 1983 projection that we gave you last year, and the fiscal year 1983 program request for this year. As you can see, this years request is approximately 31 percent below last years projection. The major reason for the reduction is Roland's cancellation.

These two charts show the transition from the present to our modernized air defense family. Note that we plan more Manpad teams in the force by fiscal year 1987. This increase is caused by the authorization of Stinger to units that previously were not equipped with Redeye; for example, Lance battalions. The graph on the right shows the transition of the Himad/Shorad force over time. In terms of battery increments, the Himad force is planned to increase by 60 percent. It will also quadruple the firepower, while reducing Himad manpower needs. It is significant that this great increase in capability while reducing manpower is one of the real success stories of Army modernization. Modernization of our air defense force is just beginning. The path that we are now on will provide us with the modernized force shown. It is important for you to note under this plan it will take until fiscal year 1988 to get over one-half of our combined Shorad/Himad force modernized with new equipment. To keep abreast of a rapidly improving threat, we need to ensure that the fielding of the new family of air defense continues at the rate shown here. This program plan when executed, will provide our Army with a much needed, highly capable air defense force.

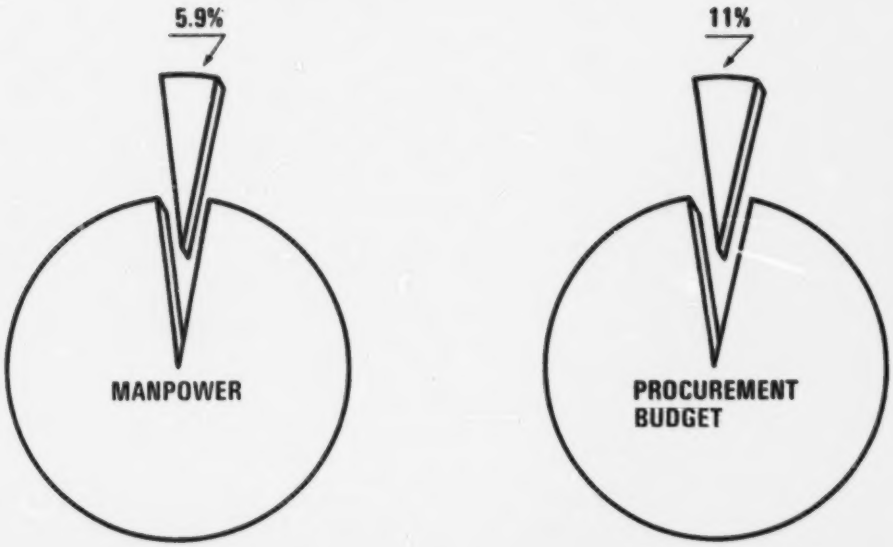
Mr. Chairman, ladies and gentlemen—this completes the presentation of Air Defense Program Plan 92.

STATEMENT OF MAJ. GEN. JAMES P. MALONEY, DIRECTOR OF WEAPONS SYSTEMS OFFICE, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

General MALONEY. It is a pleasure to be here. I would like to submit my statement for the record, with your permission, and summarize it briefly from several charts.

Mr. STRATTON. Without objection, that will be done.

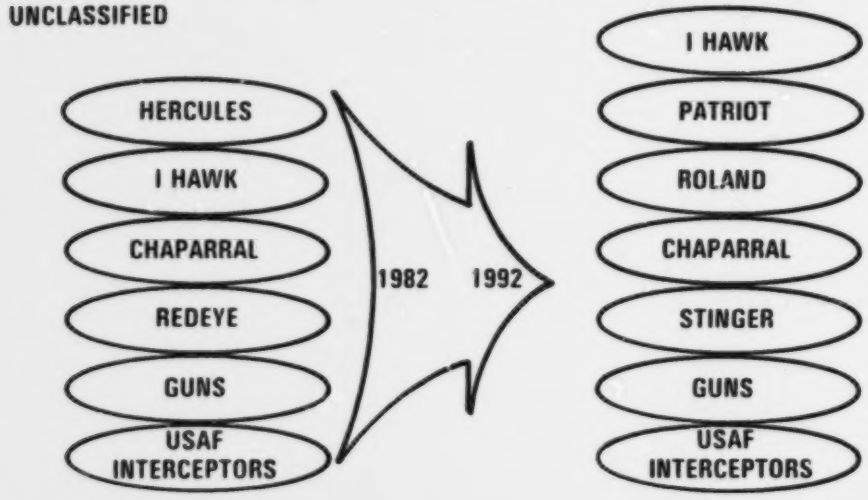
THE INVESTMENT: SOLDIERS & DOLLARS



General MALONEY. Sir, we are talking about this kind of chunk of the Army—about 5.9 percent of the manpower of the Army and 11 percent of our procurement budget.

There is the family of air defense systems that we have today, to include air defense interceptors and I will discuss all of these with the exception of interceptors. This is a family to which we will evolve by 1991.

ARMY AIR DEFENSE PROGRAM PLAN '92



A moment on the threat and then I will summarize that, because I know you have heard a great deal about the air threat.

The fixed-wing improvements we see in the Soviet fleet give them greater range, greater payload capability, greater capability to carry ordnance, that is, bombs and missiles and rockets; will give them greater ability to fly in adverse weather and find our targets in adverse weather, and they are improving in electrical and optical countermeasures, and they fielded during the past year—and we estimated they would last year—an aircraft called the [deleted].

Their helicopter fleet is improving, their assault helicopters which would equate to our Huey-class helicopters, we expect to have increased by 25 percent during this period. Their armed helicopters are expected to [deleted] and the production rate of their other helicopters now is at [deleted] a month, and for contrast our own attack helicopters are being produced at a rate of three a month—the Cobra. We hope the attack helicopter will eventually be produced at a rate of [deleted] per month.

They are very much increasing their threat. They are establishing new organizations for these aircraft and we expect to see a follow-on attack helicopter, a better kind, follow-on to this one, by [deleted].

In the tactical missile area, during the last hearing you heard a great deal about our Pershing missile and some of their missile capability to come in toward us. In fact, their tactical missiles are developing smaller miss distances and they are becoming more accurate and they are doing this by improving their guidance technology, and we have very clear evidence of this. They are getting so good in accuracy that they are beginning to use or move toward

the use of improved conventional munitions rather than a necessity for a nuclear warhead; so we see an increasing threat in this area.

FAMILY OF AIR DEFENSE SYSTEMS

Primary role	Current system	New system
Widely distributed attrition producing against low altitude attack	Redeye	Stinger
Defend maneuver elements against low altitude attack	Vulcan	Divad
Defend high value rear area assets against low altitude attack	Chaparral	Chaparral/Roland
Fast response, limited area low to medium altitude attack	I-Hawk	I-Hawk/Patriot
Fast response, limited area medium to high altitude attack	Hercules	Patriot
Flexible, wide ranging area defense medium to high altitude attack	F-4, F-15	F-15, F-16

This is the family of air defense systems that we have. We need a family because if you start with the long-range systems of interceptors, they are very flexible and can reach out a great distance, but they cannot be on patrol all of the time, so their reaction time is somewhat limited. The reaction time of air defense systems, surface-to-air missiles, is very short.

For example, we have units on [deleted] right now. They could deliver a missile within [deleted]. They can come up to such a state that they can deliver a missile in a matter of seconds after they are alerted.

We have long-range systems such as our old Hercules, to be replaced by Patriot, to give us a capability to reach way out as a threat is approaching us. If they get through this threat we have lower altitude systems that fill in the folds of the Earth that the long-range systems can't see into; they look down low and up to medium altitudes, and we have more of them than we have of our long-range systems. We have improved lookdown and we will keep some Improved Hawks and we will move Patriot into the field.

As you get down to a shorter range, if aircraft get through these long-range and medium-range systems and get into or close to a high-value asset, for example an airfield, we might want to protect that with Chaparral, about [deleted] range, infrared homing kind of system.

In the future we will have Chaparral which we have planned to improve and we will have a very small amount of Roland. Roland was effectively cancelled but we will have one light battalion which I will describe to you.

We also have, as you get more toward the front of our battle area, we defend our maneuver elements, the troops at the forward edge, with Vulcan, a 20-millimeter Gatling cannon. It doesn't have very much range and we plan to replace that with the Division Air Defense Gun, DIVAD, which I will describe in detail in a minute. That is a 40-millimeter which can reach out a great deal farther than can Vulcan.

Finally, if the aircraft get through to attack our troops directly, we have self-defense capability in the Redeye. This is a shoulder-fired system, and it has been giving us good service for many years, but it is pretty well worn out and it [deleted] say, the ground attack fighter; it [deleted] so we need to replace it with a better system called Stinger.

Lets us look at the first of the major systems that will replace our Hercules system. Hercules, which this replaces, has been in the field now for some 28 years. For the same reasons that were described by Colonel Fiorentino in the last hearing, it is getting very difficult to maintain Hercules. Additionally, Hercules can [deleted.]

Patriot, on the other hand, for which we are asking $881 million this year for 376 missiles and 12 fire units, Patriot can live in todays electronic countermeasure environment and grow to tomorrow's electronic countermeasures and have [deleted] targets. So, we get a great deal more capability out of the Patriot than we did in our previous system, the Hercules.

In fiscal 1983 this is the total request. I will show you several charts like this, so I show you the RDT & E request for your interest, weapon system procurement, which of course you are most interested in, that figure right there, and quantities, 376 missiles and 12 fire units, and a fire unit here is a battery set of equipment. The amount of that organization, commanded by a captain, about 100 or so men, and it is capable of conducting an engagement. It has all of the equipment that will do that.

Mr. STRATTON. What does the word "delivery" mean?

General Maloney. The deliveries are what will be received by the Army during this fiscal year period, so during the fiscal year 1983 period we will receive our first—or rather our second, a total of seven fire units of Patriot. We are in production now.

Patroit rollout will occur within the next couple of months; the project manager will give you the precise details.

Mr. STRATTON. Your quantity buy is 376?

General MALONEY. That is right.

Mr. STRATTON. You are only going to have five of these?

General MALONEY. This is missiles, sir, and we didn't show you a missile delivery here, but we can provide that for you.

Mr. STRATTON. What is the "5" standing for?

General MALONEY. That is the fire unit.

Mr. STRATTON. That is five of the 12?

General MALONEY. Sir, these are from fiscal year 1981 buy. The five from that procurement will be delivered during this period of time. These were financed several years ago and these are the one that would be delivered during that period.

The next chart—this is our total plan to buy fire units for Patriot batteries during the next several years to come. There is a total of 103 battery sets of equipment which are planned to be bought to equip the entire force.

Mr. STRATTON. What kind of target is this designed against?

General MALONEY. It is designed against aircraft targets.

Mr. STRATTON. What altitude?

General MALONEY. From on the deck to [deleted] very, very high altitude, so it can cope, for example, with a reconnaissance aircraft of the U-2 type that flies at a very high altitude.

Mr. STRATTON. How many feet is that?

General MALONEY. It is [deleted] sir, and it reaches out to a range of about [deleted] so it has very great capability.

Now, we won't buy a whole lot of these, 103 is not a great many of them, but they are very capable and they have very, very long range and excellent capability and also they are quite expensive, as

you have noted and as will be discussed by General Bunyard, but we are getting a very great increase in effectiveness and a reduction by far of the number of men required to serve that battery, given the effectiveness that we get.

There is the missile procurement plan, sir. The fiscal year buys, out to what we perceive will be the end of our procurement in 1990, and we will have a total of some 6,000-plus missiles in the inventory.

Sir, this again is a recap of the dollars and I think the issues that we will have in each of the programs that we will present to you are cost and how it is doing in testing. I brought the best experts in the army to provide this to you.

The first is General Bunyard, a program manager of Patriot.

Mr. STRATTON. The fire unit includes the radar, is that right?

General MALONEY. That is correct.

STATEMENT OF BRIG. GEN. JERRY M. BUNYARD, USA, PROGRAM MANAGER, PATRIOT MISSILE SYSTEM, REDSTONE ARSENAL, ALA.

General BUNYARD. Once again, it is a pleasure to appear before the committee, and I too, have a prepared statement, and with your permission I would like to submit it and discuss the 12 elements.

Mr. STRATTON. Without objection, that will be done.

General BUNYARD. With reference to the fire units, the two that we saw in fiscal year 1982 and the five that we saw in fiscal year 1985, we bought five fire units and the two you see in fiscal year 1982 will be the first two delivered out of the fiscal year 1980 buy.

The missiles, I can report to you today that we have received 10 missiles already; four of these have been shipped to White Sands to begin testing. This is somewhat similar to the chart that we had a while ago. The quantities are 12 here and the 376 missiles.

One thing I would like to bring to your attention is the total number of missiles that we are buying, which is 1,944 missiles, more than what I reported to you last year. That is one of your questions, and I will address that as we get into the next chart.

The cost aspect of it is next, if I could have the next chart. As you are aware, we were one of the systems that broke the Nunn amendment and if I may I would like to go through and discuss exactly what entailed the breach at this particular threshold.

Using the March 1981 SAR—and that was the basis from which we worked—this was the amount we had in there. The DSARC which we are showing right now is the amount shown here. The major item that was an increase in here is under the term of "Added Scope," we are talking about two basic elements in here, one was the addition of the launchers, 265 launchers, and 1,944 missiles.

The reason for that was that, as General Maloney explained to you, is the threat that we now know, that the Soviets have that capability, and basically that has increased the number of aircraft that will be using the corridor busting tactics, with increased ECM, it was determined by this study that we needed at least 32 missiles per unit to counter this type of threat.

Now, to give you an idea of what that gives us. It gives you an increase of about 25 percent as far as the number of aircraft you are going to be able to kill, and it also gives you that added ability of about 33 percent more in respect to defending the air bases.

Mr. STRATTON. What is this missile used to defend?

General BUNYARD. Patriot is located in the corps area, back from the division area, and it is defense of the air from the attack coming in, and also by doing so will be a defense of the rear elements which would include the air bases. It is located with the Hawk, and behind the Chaparral, and——

General BUNYARD. Yes, the corps areas.

Mr. STRATTON. What about bases?

General BUNYARD. And the associated bases in that area, yes.

General MALONEY. The priority for deployment of Patriot is first to the rear areas, to defend air bases, nuclear storage sites and prime supply sites, but primarily for air-based defense.

Now, the very first unit that we are going to put over there, we are going to put [deleted] That is sort of an aberration. Most of our early deployed units go to the [deleted].

Mr. STRATTON. This is to be exclusively for Europe and not for CONUS, is that right?

General MALONEY. Yes, that is correct. We will have some of these fire units in CONUS to serve as a rotation base and deploy to Europe, but we will not have these missiles on station in the United States to provide defense within the continental United States.

At one time that was the plan, sir, but a number of years ago we were reduced in total numbers and that was dropped from our plan.

Mrs. HOLT. The increase from five to eight launchers, that is almost the most expensive part of that?

General BUNYARD. We are talking about launchers and missiles, almost $1.4 billion, of the $2.2 billion that we are talking about.

Mrs. HOLT. And we feel that that is cost effective in what you are accomplishing?

General BUNYARD. Yes, ma'am.

Mr. CAMPBELL. Is part of the rationale for increasing from five to eight launchers the fact that the Roland has been terminated?

General BUNYARD. It was not considered at that point. What we needed at that point was additional ready missiles in the belt, if you will.

Mr. CAMPBELL. How do you plan to fill that void that was created as a result of the termination of Roland?

General MALONEY. I would like to comment on that. When Roland was canceled, the reason for its cancellation was affordability. The Army internally looked at its budgets for the future and looked at what was, we thought, marginal or closest to the margin, and decided to cancel Roland.

The reason is that we believe, or we looked across our priorities of systems and we found at the bottom of the air defense priorities really was the Roland system; it was to go to air bases in Europe; it would bump Chaparral and Vulcan off those air bases and take over that role from Chaparral and Vulcan.

Now, in fair weather the Chaparral and Vulcan and the Roland contribution are about the same and we decided also to provide Chaparral with a forward-looking infrared system, a FLIR sight like we have on the tanks, for that matter, that can see through a lot of bad weather and can certainly see well at night.

We found that with the FLIR, Chaparral provided us sufficient defense during about 85 percent of the time, so it turned out that we were procuring Roland to fill about a 15-percent heavy weather period of time. We elected to take the risk involved and to cancel the Roland program. So we did that.

Now, how do we make up for that cancellation? We intend that those Chaparral/Vulcan battallions which are still stationed at those air bases and will continue to be there into the infinite future. We also decided—and I am talking about this a little early but I may as well bring it up—to keep some Improved Hawks in our force. We had planned, when we brought Patroit in, to eliminate Hercules and eliminate I-Hawk. We have now decided, partially because we canceled Roland, to retain some of our I-Hawk system assets. We are going to move those back and provide better air defense of the air bases with those I-Hawk systems.

Additionally——

Mr. CAMPBELL. How many Hawk systems are you going to retain?

General MALONEY. We plan to retain [deleted] which is of equipment that can engage an aircraft, so with an I-Hawk battery we can engage two aircraft at a time.

We are going to move those back for air base defense.

Additionally, we are going to put [deleted] in the rear for air base defense that was previously placed there.

Mr. CAMPBELL. Is that the 32 percent alluded to by General Bunyard?

General MALONEY. No. The 32 percent he was talking about was a study that occurred even before the decision to cancel Roland. That study skimply indicated that we [deleted] and we didn't have [deleted] and there were too many [deleted] and contributing to the air battle. That was the reason for the additional three launchers.

Mr. CAMPBELL. Could you provide a copy of that study for the record, please?

General MALONEY. We would be pleased to.

[Study provided to committee under separate cover.]

General BUNYARD. In the other area, we are talking about the revised maintenance concept which consists of three basic elements: One, group one is an intermediate maintenance capability which does that maintenance between the battery or the lowest level, and back here.

The second portion of that was to go in an take a look, which we did, as to where do we need to recertify this missile. We have a 5-year missile that needs to be recertified to make sure that all of the batteries and the components are in proper operation.

We found that it is most cost effective by going and establishing a recertification facility in Europe as opposed to bringing the entire missile back to recertify in the States.

We will have one in Europe and one in CONUS.

The third element of that was the point of establishing the capability of repairing what we call our battery replaceable units, for example, a circuit card, at a depot as opposed to the contractor facilities.

We are talking about a 3-to-1 ratio of cost of a contractor versus what we can do with a Government depot.

The inflation that you see here, which is the next big element of 232.4 million, is nothing more than using the January OSD indices and applying them to the program.

With respect to the schedule stretchout or budget reductions, there is the $150.8 million that I suffered last year in the reduction to the program. This is the factor here. Here is the outyear engineering that is associated with that stretchout.

So, what you are seeing in here is a $2.2 billion increase, 79 percent of which is attributed to added scope, 10 percent due to inflation, 8 percent due to the stretchout of the Budget, and the 3-percent engineering that is associated with that stretchout.

Last year when I briefed you, sir, I talked about the test program that was laid out for the Patriot system. I talked about blocks of testing. This was the contractor block of testing shown here and it was to be turned over to the project manager to do his testing and then to the independent tester to be completed at that point in time. And then we get into the testing that is to be done in 1982, which is a component design and system design, and that is to be followed in 1983 with a follow-on evaluation.

I am very pleased to report to you that all three of those tests have been completed and completed on time, and very successfully. In fact, of all of the criteria laid out by OSD, we met all of those criteria with the exception of the maintainability—and as I reported to you last year, we knew at that point in time that our diagnostic software was not going to be there and we were in the process of implementing a diagnostic improvement program, and that is ongoing right now and going quite well.

That will be further evaluated out in the follow-on evaluation.

Mr. STRATTON. Thank you very much. Are there any questions.

Mrs. HOLT. I have none.

WRITTEN STATEMENT OF BRIG. GEN. JERRY M. BUNYARD

Mr. Chairman and distinguished members of the committee, I am pleased to appear before this committee to present the fiscal year 1983 procurement request for the Patriot Air Defense Missile System. Further, I am pleased to report that excellent progress has been made on the Patriot program during the past year. I know that this committee is primarily interested in cost considerations and funding requirements for Patriot, and my remarks will concentrate in those areas. I will also discuss some recent accomplishments resulting from the Patriot test program and report to you the status of initial production, discuss our activities in preparation for fielding and review international interests expressed in Patriot.

For those of you who may not be familiar with this system, the Patriot is an advanced surface-to-air guided missile system capable of operation in an electronic countermeasures environment. It uses a multi-function phased array radar to perform a variety of surveillance, acquisition and guidance tasks in directing a battery of eight launchers armed with four ready missiles each. The system provides a high probability of target kill, and possesses the capability of engaging multiple high performance air-breathing targets simultaneously.

PATRIOT

PRODUCTION PROGRAM

	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	TOTAL
UNDER CONTRACT	5 FU 117 MSL	5 FU 130 MSL									
BOM UNDER CONTRACT			9 FU 176 MSL								
CURRENT BUDGET				12 FU 376 MSL							
TO COMPLETE					18 FU 664 MSL	18 FY 882 MSL	18 FU 900 MSL	18 FU 920 MSL	920 MSL	1132 MSL	103 FU 6217 MSL

The Army intends to procure 103 Patriot fire units and 6,217 missiles at a sustaining rate of 18 fire units per year. We are now entering into our fourth funded delivery period and are requesting funds to continue production buildup to a rate of 12 fire units and 376 missiles in fiscal year 1983.

FINANCIAL SUMMARY

[Dollars in millions]

	Fiscal year—				To complete	Total
	1981 and prior	1982	1983	1984		
RDT & E	$1,860.1	$57.8	$47.1	$86.1	$164.6	$2,215.7
Weapon System Procurement	$943.1	$755.1	$881.0	$1,127.4	$4,791.3	$8,497.9
Quantity:						
Fire units	10	9	12	18	54	103
Missiles	247	176	376	664	4,754	6,217

The next chart summarizes the dollars and quantities programmed for Patriot in the budget. The fiscal year 1983 share includes both RDT & E and weapon system procurement dollars. While it is understood that procurement appropriations are of primary concern to this subcommittee, both types of funding have been presented for purposes of exposition.

The Patriot RDTE program continues development of evolutionary system enhancements to meet the ECM threat in the late 1980's and beyond, initiates the development of a device designed to [deleted] and establishes a diagnostics improvement program to make better use of imbedded tactical computer systems to enhance the supportability and maintainability of Patriot. $47.1 million are required in fiscal year 1983 to fund these RDTE programs.

The total fiscal year 1983 request for Patriot procurement is $881.0 million. $805.1 million of this total is requested for 12 Patriot batteries and 376 missiles. The remaining $75.9 million is requested for procurement of initial spares.

PROGRAM ACQUISITION COST TRACK

[Dollars in millions]

	ESC	Percent of total growth
March 81 SAR	8,465.9	
Added scope	+1,778.5	79
Eight versus five launchers per fire unit	(+1,372.1)	(61)
Revised maintenance concept	(+406.4)	(18)
Inflation	+232.4	10
Schedule stretchout (budget reductions)	+168.8	8
Outyear engineering	+63.6	3
Total growth	+2,243.3	100
December 81 SAR	10,709.2	

Patriot has not been immuned to cost growth during the past year. The program acquisition unit cost of a Patriot battery increased 26.5 percent from a base of $78.4 on March 31, 1981 to $99.159M on December 31, 1981, and resulted in a total program increase of $2.24 billion. The increase is attributed primarily to added scope which includes an increase in the quantity of missiles and launchers to be procured, and a change in maintenance concept. It also includes inflation, programatic changes resulting from current year (fiscal year 1982) budget changes, fiscal year 1983 funding constraints placed in effect during the last budget cycle, and increased outyear engineering.

A. *Increase in procurement quantities of missile and launchers.* In 1965, the projected number of Warsaw Pact aircraft expected to be encountered by the NATO air defense was such that only 12 missiles were planned for an equivalent Patriot fire unit. In 1972, the threat projected in 1965 was recognized as being underestimated and the number of missiles per fire unit was increased to 20. Currently, the projected threat in conjunction with expected use of [deleted] dictates 32 missiles per fire unit to achieve an acceptable level of air defense. Potential launcher increases were presented to your committee during testimony last year and 2 years ago. This increase in firepower requires an additional 265 launchers and 1944 missiles at an estimated cost of $1,372.1 million.

B. *Revised maintenance concept.* Maintainability data obtained during developmental and confirmation testing indicates a shortfall in the ability of computerized diagnostics programs to accurately localize system faults. Additionally, the results of logistics support analyses, which were approved by the Army in August 1981 dictated several changes in the Patriot maintenance concept. The revisions address three general areas:

(1) Missile surveillance and recertification at Government facilities in Europe and CONUS vice contractor facilities in CONUS only;

(2) Repair of battery replacement units (BRU's), i.e., lowest level of common interchangeable module, at existing Government depots vice contractor facilities whenever it is cost effective; and

(3) Addition of a level of maintenance between depot and battalion (intermediate maintenance).

Cost increases associated with these changes include purchase of tools and test equipment, documentation revision and publication, data collection/analysis, and logistics support analyses and records. The total development and procurement cost is estimated at $406.4 million.

C. *Inflation.* The application of the January 1982 OSD indices produced an increase of $232.4 million.

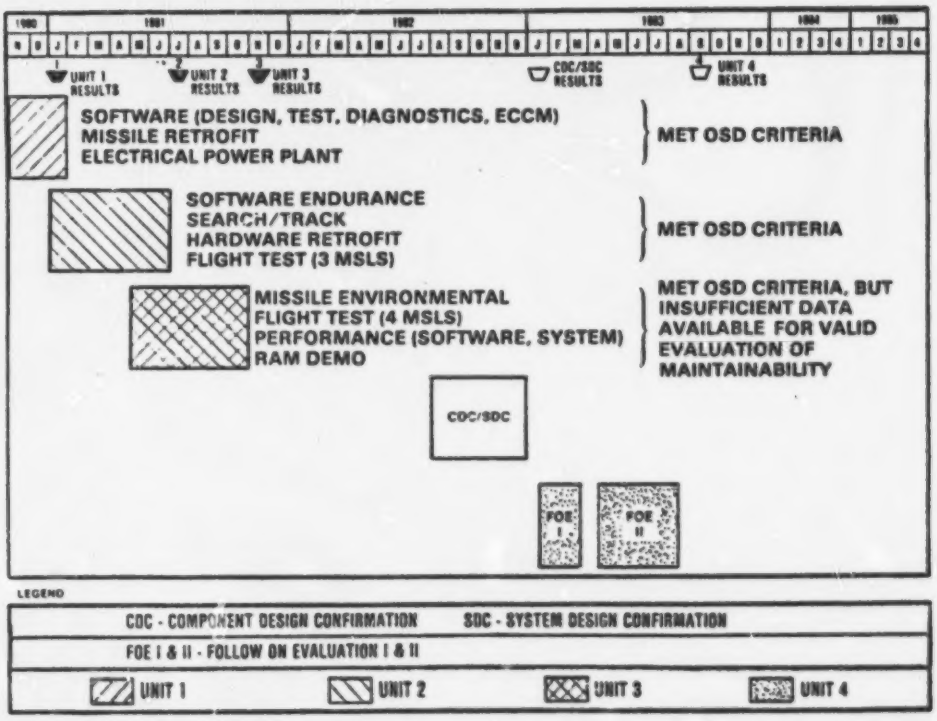
D. *Programatic changes.* During resolution of the fiscal year 1982 budget, Congress reduced Patriot funding by $152.8 million below that included in the March 31, 1981 selected acquisition report. Also, funding constraints in fiscal year 1983 resulted in a reduction of the planned number of missiles and other equipment to be procured. Therefore, missiles and equipment planned for procurement in fiscal year 1982–83 were deferred to the outyears resulting in a cost increase estimated at $168.8 million.

E. *Outyear enegineering.* Greater outyear engineering requirements for software support, product/system engineering, product assurance and configuration management increased the program cost $63.6 million.

In summary, 79 percent of the cost growth is added scope, 10 percent is inflation, 8 percent is budget related schedule slippage, and 3 percent is outyear engineering.

PATRIOT TEST PROGRAM

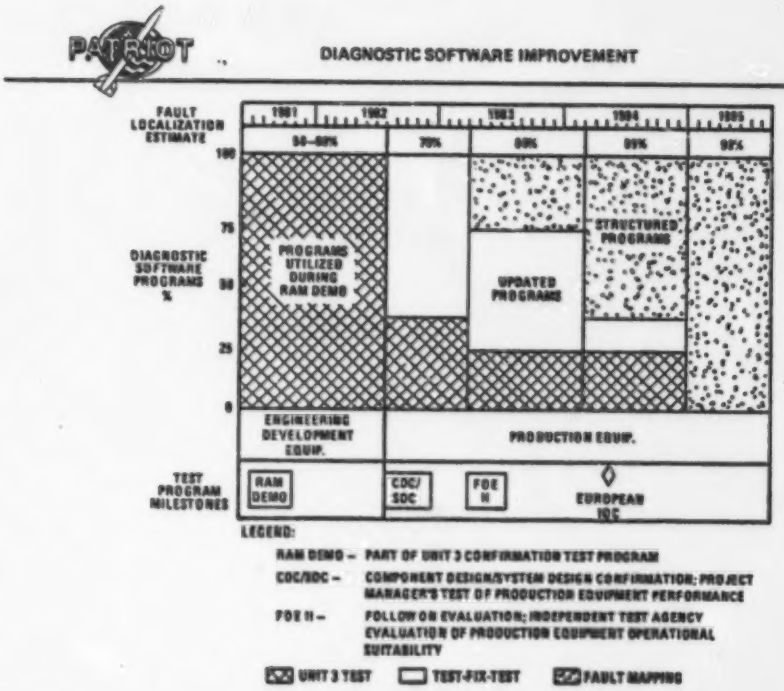
Based on the recommendations of the DSARC III in August 1980, the Secretary of Defense approved Patriot for limited production recognizing that system performance requirements were not met for reliability, maintainability and performance in some electric countermeasures environments.



A four unit verification program was established to demonstrate that these shortfalls would be corrected in production hardware. The first three tests used upgraded development equipment and the fourth will use production hardware. In order to provide the project manager with an opportunity to confirm that the production units would, in fact, perform as well as the development units, the Army, with OSD approval, inserted a component/system design confirmation test utilizing initial production hardware.

The results of tests one through three have been evaluated by OSD and found to have met or exceeded the established goals in all areas except maintainability. The reliability demonstrated by the system exceeded the threshold requirements threefold and on that basis the limited production rates were lifted in fiscal year 1982 permitting a buildup to the sustaining rate of 18 fire units per year beginning in fiscal year 1984 as mentioned earlier. The system was also certified ready to move on to the operational tests of first production hardware. Confirmation tests are planned in the August to December 1982 timeframe followed by the follow-on evaluation in mid-1983.

As indicated earlier, the one outstanding shortfall remaining from tests conducted thus far is in the area of maintainability. The Patriot system maintenance concept relies on the ability of the organizational operator/maintainer to locate a faulty battery replaceable unit (BRU) and to repair by replacement. To this end, the Patriot system specification states a 99 percent detection requirement of all mission essential failures during the "on-line" operations (tactical mode). Additionally, during the "off-line" maintenance mode, 99 percent of all failures should be isolated by means of diagnostic software programs and manual procedures.



The "off-line" diagnostic software and manual procedures have correctly isolated the faulted BRU about 50–60 percent of the time versus a goal of 89 percent set for recent testing. While this shortfall is significant, it is not particularly alarming because there simply has not been enough data collected at this point in the testing program to perform a valid assessment that would provide confidence that the system was or was not capable of meeting the requirements. Furthermore, the Army has identified an intensive development program to mature the status monitor and diagnostics capability of Patriot. This program has been approved by the Under Secretary of Defense Research and Engineering and lauded as an exemplary model for other major systems to use for software diagnostic development.

More than a year ago, the contractor initiated an "update program" as part of the overall diagnostic software improvement plan to correct the shortfall by addressing the specific problems identified and performing additional requirements analysis in those subsystems which demonstrated exceedingly poor performance. These updated programs will be used by the system during the next phase of testing. Although this activity will result in an improved product, it is clear now that it will not achieve the desired performance level necessary to effectively maintain the Patriot system, i.e., the maximum expected performance level would be between 70 and 80 percent isolation capability. the missing ingredient, which precluded higher levels of performance, was the lack of adequate hardware documentation to support a structured analysis of the system. Structured analysis consists of overlaying or fault mapping each dagnostic software test and using manual fault locate procedure on the applicable Patriot hardware subsystem. The "structured programs" approach will result in achieving greater than 90 percent isolation capability required to effectively support the maintainability requirements of Patriot over the life of the system. Even though we will deploy to Europe with a fault localization capability of about 80 percent, the intermediate maintenance provided by the revised maintenance concept will adequately provide support to the low-density of Patriot units in Europe during the [deleted] timeframe. Furthermore, the approach will effectively support the training and the maintainability of the post deployment diagnostic software and manual fault locate procedures until the programmed improvements have been completed.

Maintenance performance goals to be achieved at maturity and the specific levels to be demonstrated in the follow-on tests in mid-1983 are being established in ac-

cordance with the provisions of the decision memorandum. The Army is confident that the reliability, availability and maintainability characteristics of Partriot will be credible and viable to sustain operations in the field upon completion of the improvement program.

INITIAL PRODUCTION

The initial production delivery schedule called for delivery of the first Patriot ground support set and four tactical missiles in January 1982.

As with many new product lines, the contractor was unable to meet this schedule. Several key vendors were late providing materials and there were problems establishing viable sources for closed product lines. The contractor experienced a substantial number of first-time-through problems during the testing of initial assemblies coming off the production line and coupled with late availability of test stations was forced into a workaround and rework mode resulting in lower throughput than planned. While the production problems we have experienced are not totally behind us, most have been corrected and we are well on the way toward resolution of all of them. The first four missile rounds have now been delivered to the government and the first full-up Patriot fire unit is scheduled to be delivered to the Government in April 1982.

PATRIOT FIELDING

The Patriot system is scheduled for tactical deployment within the continential United States at Fort Stewart, Georgia, Fort Bragg, North Carolina, Fort Riley, Kansas, and Fort Bliss, Texas, under the control of the forces command. In Europe, nine Battalions will be deployed under three air defense group headquarters reporting to the 32d Army Air Defense Command to provide coverage for forces in the U.S. sector of central Germany. These deployments are contingent upon a production rate increase to 18 fire units per year beginning in fiscal year 1984. U.S. Army Europe is heavily committed to the deployment schedule tactily understood as part of the current program plan. Their MCA and infrastructure funding profiles are tied to it, as is the deactivation of Nike-Hercules units which has already begun and the [deleted] units pending arrival of Patriot. It is imperative that we deploy Patriot as planned in order to maintain a credible air defense posture in Europe.

Training is presently underway at Fort Bliss for instructors and key personnel who will instruct other soldiers on the operation, maintenance and deployment of the system.

Officers and key personnel to man the first Partiot battalion have been assigned and are on-station at Fort Bliss receiving preliminary training and performing organizational activities.

Site selection has been accomplished in Europe, with [deleted] sites identifed (some sites are old Nike-Hercules or Hawk [deleted] and construction has begun on the site selected for the Patriot Field Army Support Center, which will function as the intermediate maintenance activlity for Patriot in Europe.

Maintenance above the organizational level will be accomplished by use of contractor personnel and highly trained Army systems technicians. Maintenance of the missile round iteself is minimal since the round is certified to be a "wooden round" with its shipping, storage and transport container also used as the launch canister.

Initial spares provisioning has been accomplished and spare parts support utilizing the Army supply system will be available in December 1982.

Actual deployment of the first Patriot Battalion will occur in January 1983 for the CONUS based units and [deleted] for the European theater.

INTERNATIONAL INTERESTS

	NATO	Japan
Relationship with United States	MOU with 6 nations (Belgium, Denmark, France, Germany, Greece, and The Netherlands) [1].	Acquisition study August 1982–January 1983
Production baseline	[Deleted]	[Deleted]
Decision to acquire anticipated	[Deleted]	[Deleted]
Type acquisition	FMS/Coproduction	FMS/Coproduction
First procurement funds planned	[Deleted]	[Deleted]

[1] Britain has expressed recent interest in Patriot.

The U.S. has entered into a memorandum of understanding (MOU) with six NATO Nations (Belgium, Denmark, France, Germany, Greece, and The Netherlands) to examine various acquisition options and to develop the most suitable option for introducing the Patriot system into the NATO defense structure. A set of acquisition options for consideration by national authorities ranging from a foreign military sale through several coproduction options to a full licensed production program in Europe were completed in August 1981. Plans call for a production baseline of about [deleted] fire units with the decision to acquire anticipated in [deleted] next, the Europeans will develop an acquisition planning MOU to determine a preferred option and solidify implementing plans. The new MOU agreement is expected in October 1982. Additionally, there have been recent inquiries about Patriot from Great Britian, but the extent of their interest is not yet known.

The Japanese interest in Patriot has increased. We are in the process of initiating a formal acquisition study which will be conducted from August to December 1982. Depending on the outcome of this study, Japan could decide to acquire up to [deleted] Patriot fire units in late [deleted] with first procurement funding to follow in [deleted].

In short, foreign interest in the Patriot program is continuing at a high pace, but no specific, quantitative requirements or commitments have been set to date.

SUMMARY

In summary, Patriot has met or exceeded the requirements charted by the decision memorandum on DSARC III, except in the area of maintainability. We know how we are going to fix that shortfall, and have initiated an extensive improvement program to reach our supportability goals. Production hardware is nearing completion and formal tests are scheduled to verify its performance in the hands of soldiers. You can be assured that we have every reason to be optimistic about the outcome of these tests, and are looking forward to the day Patriot will be operational in Europe. I am sure that you appreciate the fact that a modernized air defense is absolutely essential. Patriot will fill the gap, but its orderly deployment is contingent upon increasing the production rate this year, and next, to reach a sustaining rate of 18 fire units per year. Our allies, particularly NATO and Japan, are attuned to the successful results we have obtained from testing and to the progress we have enjoyed in terms of technical accomplishments and hardware production. Their interests in defining a Patriot acquisition program for themselves has risen concomitantly.

Although we have not yet completely met all of the requirements set down for Patriot, we are making considerable progress. The remaining problems have been described earlier in this testimony, and we have shown you a framework for improvement. Patriot is in fact the most capable and deadly ground based air defense system we know of today, and its deployment to the field should be made as quickly as possible. We hope that you will consider these factors favorably in your deliberations over budget requests for Patriot in fiscal year 1983 and beyond.

Thank you.

Mr. STRATTON. The next program?

General MALONEY This is the division air defense gun. The same format for this gun. Our procurement request is for 96 of these systems.

The DIVAD gun comprises a M-48 tank chassis that we have recycled with a new turret onboard, mounting two of the guns. It has an acquisition radar and tracking radar. That equates to about the same protection as the fighting vehicle system. This is capable of staying up with the M-1 tank and we kind of think of those three systems as a Triad for the battlefield.

So, this system is up forward at the very forward edge of the battle area, engaging that new attack aircraft that I mentioned, or helicopters.

This is the fiscal year 1983 request—$673 million for procurement and we will have two units delivered from our fiscal 1981 buy during fiscal year 1983.

This is our procurement objective over future time, to 618.

I might mention that the strategy of the procurement here was unique and I think is a great model for cost savings. We had two competitors—Ford Aerospace and General Dynamics—in competition to build two guns each and come to Texas for a shoot-off test. The winner was Ford Aerospace and you saw a picture of their gun. At the same time that they bid their program, they bid for the first several years of production, fixed-price program. So, we have a cap on the procurement in this program for the next several years.

The next chart, please. The check test—we conducted DT/OT and conducted a check test in November and January of this year which verified the correction of the DT/OT problems. We were successful on 11 out of 12 of the performance tests and the check tests, but we had a problem with IFF interface, and this is a radar that interrogates an aircraft and if it is a friendly aircraft you get an answer back that says: "I am friendly." This is all in code; it is displayed to the gunner on his scope, so he doesn't engage a friendly aircraft.

We had a problem with the interconnections of the IFF equipment and the gun system, and we had some problems with armament reliability which we didn't expect, but which we think are certainly solvable. They will be addressed by the project manager.

This returns to the chart and now we will ask the project manager to discuss in more detail his finding and test results.

STATEMENT OF COL. CHARLES C. ADSIT, PROJECT MANAGER, DIVISION AIR DEFENSE GUN SYSTEM, DIVAD, U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND

Colonel ADSIT. I do feel that this is one of the Army's more successful programs and in large measure the philosophy that is used on this program with guidance from the Congress, so a lot of credit has to go to the committee.

As a project manager, I feel my No. 1 priority is cost control and in that respect the last 4 years that we have had a budget we have not had a cost overrun in those 4 years.

Our cost projection for the completion of the program, I believe, is a very low-risk cost in the complex of the program. I will explain partially why that is:

Our program in the cost area has been very stable since the program started in 1977. The cost change in the unit cost of this system since the original estimate has only been 2 percent in constant year dollars, and that cost increase of only 2 percent was due to keeping a low-cost risk picture.

The development costs for this system in total are going to be $226 million, and I think that is a bargain for the Government. The use of off-the-shelf components has allowed us to complete a development program at least 50 percent less than the normal development program. We completed the whole development of this system in 34 months.

Mr. STRATTON. Who is the contractor on this?

Colonel ADSIT. This is Ford Aerospace, a wholly owned subsidiary of Ford Motor Co., in Newport Beach, Calif.

That is another one of the strengths that the program has in controlling costs and in meeting performance, and that is the favor-

able contract that we were able to negotiate in the competition that just recently ended in May.

We were able to obtain from Ford a very favorable contract; as General Maloney said, it is a fixed-price type of contract: It covers 1981, 1982, 1983, and 1984. Of the 618 systems that we are going to buy, 276 of them are on a fixed-price-type contract.

Not only have we had a good contract in terms of cost, but also in the responsibility that the contractor has. The contractor must meet all of the performance requirements of the system at no increase in cost to the contract. So, I think we are in a good cost risk position.

In the area of performance, to date I think we have done very well. The user is satisfied with the results and the demonstration to date has been very good. General Maloney indicated that we just recently completed a check test, and the purpose of that check test was to correct those things which we didn't do as well as we should have in DT/OT. Out of the five major objectives of that test, we successfully completed four, and the only one that we didn't was the one that General Maloney spoke about, and I will talk about that in just a second.

Mr. STRATTON. What is the caliber of that gun?

Colonel ADSIT. It is 40 millimeters.

Mr. STRATTON. Is that a gun?

Colonel ADSIT. Yes, and I might mention when we talk about the system—it is composed of two systems, the arm and feed system and the IFF system—and where we have had trouble is in arm and feed system.

To date, as I said, we have done very well in tests. We demonstrated a very good kill capability, and we domonstrated that the system has good survivability itself and it is flexible and it is simple to operate.

The crews are very enthusiastic about this weapon system.

The two areas which General Maloney mentioned, the IFF and the armament feed systems, I think, are low risk to fix.

The IFF device itself works fine. What we had a problem with was in timing it with the rest of the radar. We are going to be able to fix that and demonstrate that in about another 3 months.

The other problem we had was in the armament feed system in which we had some unexpected failures, frankly. The thing to keep in mind, I think, on this system is that we do have dual cannons and a dual feed system, all of which are independent and if one gun goes down we can keep on fighting and have about the same effectiveness as we do with two guns.

The other thing is that the type of problems we had are pretty easy to fix and we have fixes in hand today for most of those, and we will again demonstrate those in the June and July time frame.

The last thing is going back to the contract. In order to fix those problems we do not have to pay the contractor any more money. Those problems must be fixed within the terms of the current contract.

The other thing I think we can be proud of is the requirement area from the user; that has not changed one bit since 1977. There has not been one change to the requirement, and the Army's position is to resist vigorously any changes to their system.

The other thing I think the strategy allowed us to do is to make cost effective tradeoffs. If in the requirement document we saw something that we felt was not really needed and we could save a lot of money, we were able to make those cost performance tradeoffs. We did that in this development. We saved approximately $400,000 per fire unit by making those tradeoffs which have proved to be acceptable to the user.

What we are asking for in 1983 is the 96 fire units and the trainer and support equipment spares that go with it.

In conclusion, we feel like the strategy is working; the program is on track, and we need the budgetary support in order to be able to continue this, I think, successful program.

If we do not get budgetary support, we will be in the position of having to go back and renegotiate a very favorable contract in a sole-source environment.

We solicit your support.

Mr. STRATTON. I have a couple of questions here.

The DIVAD system was originally developed to replace the Vulcan system, but I understand that you plan to retain the Vulcan in the inventory for an extended period of time. Could you give us the reasons for that and how much it is going to cost to retain it, and how much of it is going to be transferred to the Guard and Reserve, and when?

General MALONEY. We do intend to retain Vulcan for some period of time, although we consider it an inadequate air defense capability for the forward area.

I will have to provide the costs of retention for the record. I don't have those at my fingertips.

[The following information was received for the record:]

VULCAN

There are no plans to retain Vulcan in the active force inventory. It will be replaced in the active heavy divisions by the DIVAD gun. This phase out will begin in March 1985. Vulcan will be replaced in the light divisions and the airborne and air assault divisions by LADS (Light Air Defense System). The planned IOC for LADS is late 1987. Current plans are to transfer 264 Vulcan systems to the National Guard (NG) as they are displaced by DIVAD. This transfer will begin in late 1985. Vulcan will replace the M42 "Duster" currently in the NG AD battalions.

The cost of retention of Vulcan for the National Guard (NG) will be approximately $36M fiscal year 1984-88 for POL and essential parts. This figure excludes costing for NG facilities (could be considerable), costs to sustain the NG peculiar training base and overhead costs e.g. civilian BASOPS. This transfer does not occur until the mid-late 1980's. The above plan will be revalidated this Spring and when approved, the Army will develop and program the costs in the fiscal year 1985-89 POM scheduled to be completed April 1983.

Mr. STRATTON. Where would you deploy it, in the rear area, or what?

General MALONEY. Vulcan will be with our Active Force until we have fully developed DIVAD, which is going to take a number of years yet, so we will be living with Vulcan in the Active Force for about 6 or 7 more years. A current plan is to provide Vulcan to the Reserves to allow them to get rid of their weapon

There are eight battalions of the old 40-millimeter Duster, twin-40, of Korean war vintage. It has visual fire control and doesn't have radars or anything of that sort, and it has an open top. It is

gasoline powered and it is very much out of date and must be replaced.

We are not happy that our current plan is to give the Reserves the Vulcan system and we are relooking at that. We are looking at several alternatives. We are looking at Chaparral, and we are looking at providing them DIVAD, so that is an expensive decision to make and we are considering the light air defense system, a system which would replace the Vulcan in our light divisions and our airborne and air mobile divisions. That system has yet to be defined and it is in the R. & D. concept at this point. By the time we come back to see you next year we will have firm plans for support of the Reserve forces.

The Army is not satisfied with our posture at this time concerning the Reserves.

Mr. STRATTON. We had testimony here the other day that the helicopter threat of the Soviets is increasing. Is the Army doing anything specifically aimed at countering that particular threat?

General MALONEY. Yes, sir. I would say that the most direct counter is the division air defense gun. With its range of reaching out to nominally [deleted] but it has [deleted] against the helicopter, and the DIVAD gun is able to survive at the very forward edge of the battle area, and will deny to the Soviets the ability to provide close air support to their own troops.

I visualize DIVAD as keeping the ground support fighter, the new fighter I mentioned, pushed back to the point of being ineffective, and pushing back their attack helicopters very far to the point that the only possible munition that they could employ would be a stand-off munition from a great range.

Mr. STRATTON. What about the munitions that the [deleted] are having to deal with in [deleted] don't you need some kind of infrared held weapon for that purpose?

General MALONEY. Oh yes, sir, we certainly do, and Stinger to replace Redeye is very much the answer to that. That is a hand-held shoulder-fired weapon that we will discuss next, sir.

That would be a superb weapon in [deleted] type of environment, where foot soldiers could survive and you couldn't deliver artillery against them but you might then try to deliver air strikes.

Mr. STRATTON. We had better get the Stinger because we are running out of time.

General MALONEY. This is the Stinger system, shoulder fired, capable of handling any target within its range, and its range extends out to [deleted] from the soldier.

In fiscal year 1983 with $214.6 million we will buy 2,212 missiles, and begin the production of the POST version of Stinger, and that is a new front end on the Stinger system—so this is the 1983 procurement request. We are well into production of Stinger and we are very satisfied with the production conditions and the roll-off rates and acceptance of the Stinger program.

The next chart shows our planned buy of Stinger. We do intend to equip the Reserve Forces as well as our Active Forces with the Stinger system.

To respond to a question you had yesterday, some Reserve units will be equipped with Stinger before some active Army units. The general philosophy that we use here is to give to whatever units it

is in our own Army, which includes active and Reserve Forces, to give to the people who go to war first, the equipment first.

There are four round-out brigades in the Reserve and there are a number of battalions that join parent units before some Active Force units go overseas. They get the better or the modernized equipment before some of the Active Force. So that is the general rationale for this.

Mr. STRATTON. What about the problems of Passive Optical Seeker Technique [POST]?

General MALONEY. Let me go to the next chart. [Chart 19] the basic Stinger [deleted]. We would use them during a bombing run at low level, for example.

We see [deleted] but we believe they certainly can do it. It is not all that sophisticated.

So we believe we should hedge against this probability that they will do this by improving the seeker on the front end of Stinger.

Now, the one we have begins to [deleted]. That can be done.

So, we are going to improve the front end of Stinger with the POST. I won't go into the engineering details but it gives you almost total immunity to [deleted] so we think it is a good idea to do it.

We are doing pretty well in testing. The contractor flight tests have been pretty much completed. We have conducted eight as of yesterday. I want to point out to you that we have had four hits out of eight firings. That is not a bad box score in the research and development phase. The other missiles that did not hit, we learned something from each one of them, and we feel we are in excellent position to fire the last 2 of this 10 to verify the fixes that we have had to make. then we intend to fire more, of course, in troop-type testing. But we think we are in good shape here.

The problems have been identified and tested in simulation, and the remaining two missiles will verify those solutions. Then we will conduct the 16 missiles test by the Government in April. So we believe that we are in good posture at this time in the POST development program. We think that to provide the money to begin to buy POST in fiscal year 1983, right at the tail end, is a prudent thing to do.

Mr. STRATTON. How about the second source?

General MALONEY. It will ask the project manager to talk about that in detail, but what it comes down to is that we have examined the financial status of whether it makes sense to go to a second source or not, and we have concluded that it does not.

Considering the amount of buy left by the time we could bring a second source on line, it doesn't appear to make financial sense to do so.

I will ask Colonel Rambo to talk to that in just a moment.

This is my last chart, and Colonel Rambo will talk about second sourcing, any cost problems he may have—and the status of testing, if you want some further detail.

STATEMENT OF COL. JAMES E. RAMBO, USA, PROJECT MANAGER STINGER MISSILE SYSTEM, U.S. ARMY DEVELOPMENT AND READINESS COMMAND

Colonel RAMBO. I have a statement that I will submit.

Mr. STRATTON. Without objection, that will go in the record.

Colonel RAMBO. Actually, this figure is 80,000, and our acquisition is only slightly less than 40,000 of this.

Mr. CAMPBELL. Isn't that your inventory objective, 40,000?

Colonel RAMBO. It is the total acquisition authority.

Another point I would like to make is that about 10,000 of these are basic Stingers, so that leaves 30,000 to 35,000 POST. We went through several gyrations in our study to determine what to recommend to the Army. The leading contender other than the sole-source, multiyear kind of strategy we were recommending was a competitive strategy of developing a second source after the POST production proved in, with the 44,000 rounds that we want to buy next year.

We would bring that second source up with a couple of small buys, and in the meantime hold the primary source at a level rate, and once we are convinced that that second source can build those missiles, then we would have a competitive shoot-off and we could pick the winner of that.

Unfortunately, by the time you do that there is only a very small number of missiles left to buy in a competitive fashion. That factor, combined with the facilitation of a second source, even considering a very conservative 25 percent cost reduction by competitive strategy, makes the competitive strategy over $100 million more than the strategy which we are recommending.

Mr. STRATTON. All right.

Colonel RAMBO. The next chart, please.

Mr. STRATTON. I don't think we have time for any more. Do you have any further questions?

WRITTEN STATEMENT OF COL. JAMES E. RAMBO

INTRODUCTION

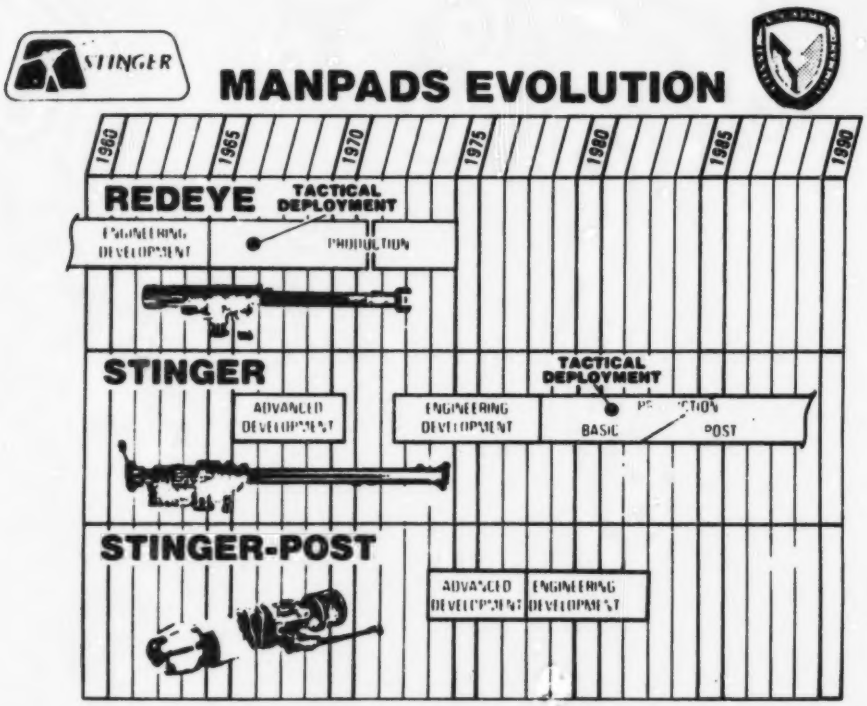
Mr. Chairman and members of the committee, I am Colonel Jim Rambo, project manager of Stinger. Today, I would like to discuss with you the status of the Stinger and Stinger-Post programs.

OVERVIEW

A review of Stinger and Stinger-Post finds both programs in a transition state. Stinger has almost passed through the turbulent transition to production and is stablizing. Missile production rates have been consistent, deployment goes well, and costs are following a predictable experience curve. Measureable trends in quality control are in the right direction. Engineering change rates are down. Readiness factors are positive. Stinger is being well-received by the user and fielding is being touted as a U.S. Army Europe (USAREUR)/Missile Command (MICOM) success story.

Post, Stinger's product improved high technology seeker, is scheduled to complete engineering development by the end of fiscal year 1982 and production transition planning is in progress. The engineering development (ED) program has experienced a considerable schedule delay and cost increase. However, after substantial ground testing, and engineering effort, all of the early technical issues have been resolved, the design is frozen, equipment fabrication is well underway, and flight testing has been initiated. Flight test results have been mixed, with several additional technical problems surfacing. Those problems are now considered resolved and flight testing

continues. The schedule risk is high to complete the program by September, but funding resources are thought to be sufficient, barring an unknown/unknown.



MANPADS EVOLUTION

This chart shows the evolution of manportable air defense systems. Redeye was the forerunner with Stinger entering the field in 1981. Stinger-Post, which is a new guidance assembly, is nearing the end of development and should enter production in fiscal year 1983.

The progression of hardware provides air defense capability against threats from unsophisticated attack aircraft to high speed, increasingly complex aircraft with elaborate countermeasures equipment.

POST

This picture shows the portion of missile affected by the Stinger-Post development. The seeker head contains the optical components and detector assemblies which generate the Rosette scan pattern, sense the infrared (IR) and ultraviolet (UV) energy and amplify it for use by the electronics section which is just behind the seeker head. Electronics for the missile are hybrid micro electronics which contain two microprocessors to process target, infrared counter-countermeasures (IRCCM) and guidance information. The electronics are densely packaged and represent a significant manufacturing challenge.

STINGER MANAGEMENT TEAM

Government: Stinger PM (MICOM)—Overall responsibility, ARRADCOM—Fuze/warhead; CECOM—IFF.

Industry: General Dynamics (Pomona)—Prime contractor, Magnavox—Fuze/warhead, Teledyne Electronics—IFF.

Stinger project manager has overall responsibility for development and procurement of the system. Other key players include Armaments Research and Development Command (ARRADCOM), who managed the development and procurement of the fuze/warhead. While MICOM managed development and initial procurement of

the identification, friend or foe (IFF) subsystem, that effort has now been transitioned to Communications-electronics command (CECOM).

Major contractors are as indicated.

INITIAL OPERATIONAL CAPABILITY (IOC)

A material review and release board (MRRB) for Stinger training equipment was convened in November 1980. Release was granted and the first Stinger training pack was issued to the 1st Bn, 11th ACR later that month.

Stinger tactical equipment was approved for issue by MRRB action in February 1981. The first tactical equipment was also issued to the 1st Bn, 11th ACR on 27 February 1981.

Stinger tactical and training equipment was delivered to the U.S. Marine Corps on November 10, 1981. USMC achieved IOC in February 1982.

Fly-to-Buy

Ten missiles randomly selected from each two month lot.

Acceptance criteria: 0 failures in first 5, 1 failure in first 8, 2 failures in first 10.

Experience: Accepted five (5) lots.

Contractual fly-to-buy lot acceptance testing is conducted at White Sands Missile Range (WSMR) from lot samples consisting of ten randomly selected missile rounds plus two backup/contingency rounds. To date, six production lots have been accepted in accordance with the Stinger lot acceptance criteria (one of the six lots was at first rejected, then accepted after corrective action and retest).

Production Surveillance Ground Testing

Periodic conformance test—2 units/month: Battery coolant unit, gripstock, guidance section, seeker head assembly, control assembly, tracking head trainer.

Production reliability test—10 units/month: guidance section, gripstock.

The following environments are typical for the periodic conformance inspection (PCI) program:

A. *PCI*—The 6 items shown are subjected to the following environments: Temperature shock, vibration, 21-inch drop, immersion, hi/lo temperature (operating).

B. Two units per month are tested on the PCI program.

Production reliability test (PRT)—consists of 10 guidance sections per month subjected to hi/lo temperature launch shock and flight vibration and 10 gripstocks per month subjected to hi/lo temperature transportation vibration.

Field Tests

Stockpile surveillance: Annual assessment of reliability, MICOM mobile test unit/team, test begins in 1983.

Shelf life program: Annual test sample from selected storage sites, MICOM laboratory test/analysis, baseline data from ED hardware, production rounds from 2d buy.

Stockpile surveillance—The Stinger surveillance concept will employ a mobile van which will visit the storage sites annually for an inspection of approximately 10 percent of the stored rounds. This evaluation will determine the "operational availability" or preuse reliability of the Stinger stockpile.

Shelf life—Stinger has a shelf life program which consists of a total of 150 missile rounds and 50 gripstocks stored in the arctic, temperate, and desert environments. This program will serve as a means of verifying that Stinger has a minimum shelf life of 10 years. Selected hardware will be disassembled at MICOM annually and inspected and tested for degradation. The shelf life baseline will be established from 18 rounds from the ED program which have been stored in the arctic, desert, and temperate invironments since 1977.

Field Test Status

Stockpile surveillance: Mobile van available for surveillance test early 1983.

Shelf life: Currently testing second sample (6 units) from ED configuration, six more ED rounds remain in 3 storage sites, will select 150 missile round and 50 gripstocks in fall 1982 for 10 years shelf life study.

Stockpile surveillance—The mobile van is in preparation now and should be ready for use in early 1983. By early 1983, a sufficient quantity of hardware should be in place and will be an appropriate time to initiate the surveillance program.

Shelf life—We are currently testing the second sample of 6 rounds from the ED configuration. The first 6 units tested last year did not reveal any unexpected degradation. The last 6 units remaining in storage will probably be left in storage one additional year for further evaluation. The primary shelf life sample will be selected in the fall of 1982.

Deployment Status

Teams deployed:	
With training hardware	175
With tactical hardware	96
Total training sets	102
Total missiles	616
Moving target simulators:	
Conversions	13
New installations	5

This chart depicts our deployment status as of February 28, 1982.

The 13 existing moving target simulators (MTS's) were converted for Stinger training during the period April 1980 through July 1980. Five new MTS's were built and equipment installed between April and October 1981. Four additional MTS's are scheduled to be deployed in USAREUR (2 in fiscal year 1982 and 2 in fiscal year 1983).

STINGER COSTS

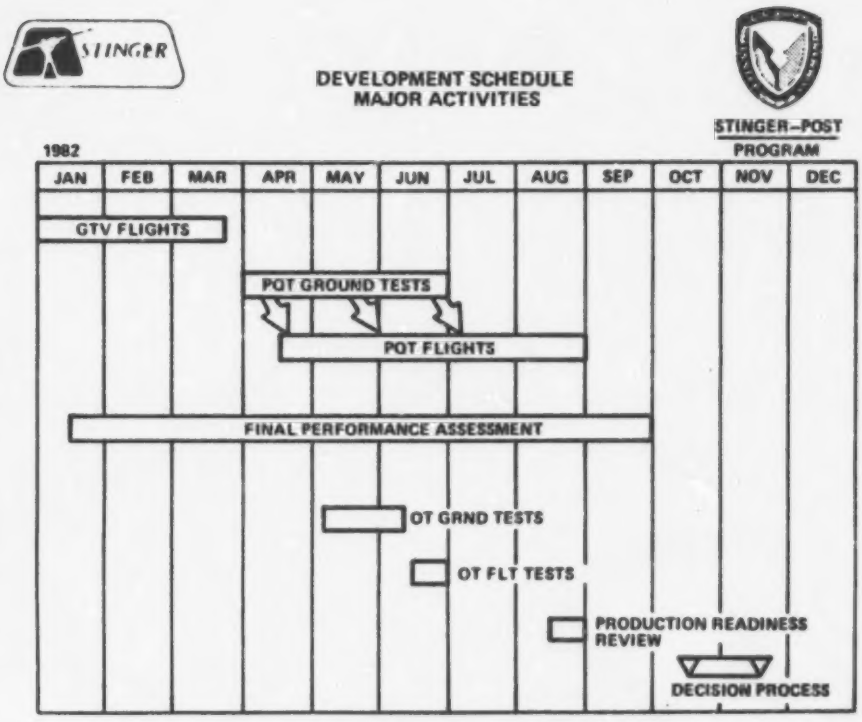
Stinger cost increases have occurred since the fiscal year 1972 developmental estimate because of programmatic changes such as increases in force structure and the addition of the Stinger-Post program. However, the most significant reasons for cost increases have been the underestimation of the effects of inflation, optimistic estimates for production learning, problems associated in transitioning to production, and increased material lead times.

Some of the measures we are using to control costs include (1) intensive monitoring of cost, schedule, and work performance; (2) increased management coordination with the contractor beginning with corporate level managers; (3) contractor corporate commitment to a disciplined system of cost and schedule control, and (4) use of the proper cost incentive clauses in production contracts. We have also instituted a major in-house cost reduction program with the potential for significant savings.

Since the fiscal year 1982 cost estimates, the program has shown a reduction in units costs. Initial production "growing pains" have been overcome and real production learning is being demonstrated by the contractor.

STINGER POST

Now I will begin the Post portion of this briefing. I'll discuss our status in completing Post Ed, the major tasks remaining, and our concept for transition to production.



DEVELOPMENT SCHEDULE MAJOR ACTIVITIES

This schedule shows the relationship of major activities which must be accomplished to support the production decision. Key areas which are schedule sensitive are: Completion of guided test vehicle (GTV) flights which provide information for simulation validation; hardware fabrication to support the production qualification test (PQT) and operational test (OT) flight test program and completion of the computer simulation runs for the final performance assessment. The schedule shown here is achievable but continues to have high risk based on the amount of testing to be accomplished and the lack of time for handling major failure corrective actions, should they be required.

The operational test and evaluation agency (OTEA) tests starting in May with training of gunners and conduct of tracking tests is keyed to availability of post tracking head trainers (THT). The last of the four THT's are expected to be available April 30. Operational test flights of six missiles is keyed to availability of six missile rounds. Current estimates indicate this schedule can be met.

SIGNIFICANT ACCOMPLISHMENTS

Demonstrated microprocessor based tracker.

Two microprocessors have been successfully integrated into the electronic design. Signal processing under software control in lieu of discrete hardware affords significant flexibility in circuit design.

Demonstration of IR/UV acquisition range and counter-countermeasure (CCM) performance and defined CCM refinements thru each of three fly bys:

Successfully conducted a series of controlled captive flyby tests with various types of aircraft both in benign and IRCM environments. Verified IR and UV acquisition ranges met performance requirements utilizing post guidance assemblies. Updated and refined the CCM design based on test results to assure performance in presence of countermeasures was acceptable.

Define target models for terminal guidance utilizing sweep test data:

Conducted a series of measurements of the IR plume signature on representative tactical aircraft at Naval Weapons Center. Utilized signature data to define the target aircraft mode for simulation evaluation and to assist in design of terminal guidance.

Have measured data/simulation/hardware correlation from: SLED test, GTV flights.

Correlation has been established with simulation results and measured hardware data utilizing SLED tests and GTV flight results.

Have fired seven GTV's—four successful, one no test for Post and two failures:

Seven of the scheduled ten GTV flights have been conducted. Four were successful against point source, QF-86 and QF-102 targets. One flight experienced a problem unrelated to Post and two did not meet all test objectives satisfactorily. The objectives not accomplished with these flights have been added to subsequent flights so that all program objectives can be obtained. These objectives are outlined in detail and our status in accomplishing them on a later chart.

GTV-1 anomaly fixes proven by subsequent flights:

The most significant design problem was an instability problem (gyro coning) experienced in GTV-1 which resulted in a significant degradation of tracking data. Although GTV-1 was successful, such a problem could result in unsuccessful flights against more demanding trajectories. Design changes were incorporated and have been successfully demonstrated in subsequent GTV flights.

PQT hardware (final design) being fabricated:

Guidance sections to support the Government PQT test program are currently being fabricated. This hardware has incorporated final design resulting from previous testing.

Demonstrated ability to endure high temperature handling environment:

Successfully tested guidance sections thru high temperature environment prior to flight testing.

Stinger-Post Qualification Program

Hybrid microelectronics assembly qual (5 each, 8 HMA types): test started, September 1981, planned completion, May 1982.

Seeker head qual (3 each, CCMV configuration): tests started, July 1981, planned completion, March 1982.

Guidance section (3 each, PQT configuration): planned start, May 1982, planned completion, July 1982.

Design qualification tests are performed at the component/subassembly level. The tests are performed on: five each of eight types of hybrid microelectronics assemblies (HMA's) of the counter-countermeasure verification (CCMV) configuration; three Seeker heads of the CCMV configuration; and three complete guidance sections of the prototype qualification test (PQT) configuration. These tests demonstrate item conformance to the design requirements, both operating and nonoperating, ambient and environmental, as prescribed in the development specifications.

STINGER-POST GTV FLIGHT PROGRAM

Objectives	Accomplished	Comment
Proof hardware:		
Basic guidance	Yes	
Terminal guidance:		
Point source target	Yes	
Mil power plume target	Yes	
Afterburner plume target	Yes	
Maneuvering plume target	No	Functional failure; fix defined; proof in GTV-9, 10
Spec rate flare discrimination	Yes	
Airframe gain response	Partially	One flight; one to go
Flight integrity/reliability	Yes	No hardware failures
Simulation Validation:		
Airframe response	Partially	Continued refinement
Target model	Yes	
Seeker response	Yes	

There are several objectives defined for the GTV flight program. They are shown on this chart. They basically center around (1) providing the hardware design and reliability and (2) validating the hybrid simulation.

In order to prove the hardware design, the GRV hardware is being flown against a variety of target types and parameters. This is to insure that the design is not a

single point design, but rather a design that handles a wide variation of target sizes and signatures. As may be seen, there are only two hardware and one simulation objectives that are not accomplished.

The system has been proofed and the simulation validated (validated indicates that the simulation duplicates the actual hardware performance given the actual flight hardware and target parameters) against three types of targets, point, military power (small), and afterburner (large). Against a high speed maneuvering target, a functional design problem was discovered in the terminal guidance bias circuitry which caused a large target miss because the target body temperature caused the seeker to treat the target fuselage as a large plume source. A fix has been identified and is to be implemented for proofing in GTV's 9 and 10.

The other hardware objective that has not been met is also a factor in the simulation validation. The airframe response after rocket motor burnout has a higher gain/response than predicted. The airframe gain has been indentified in a previous flight and will be checked again in GTV-8. This will essentially complete the required simulation validation except for continued minor refinement.

STINGER-POST TASKS REMAINING

Hardware containing a revised method for implementing target adaptive guidance (TAG) will be flown in March. Among other objectives, the flight will verify the adequacy of TAG in the terminal phase of flight.

Two additional flights (GRV-9 and -10) remain in the GTV series; both are planned with QF-102 target. These flights will confirm adequate TAG, provide information on a maneuvering target, and provide additional verification of simulation plume modeling.

Additional information to validate the Stinger-Post computer simulation will come from GTV flight analysis. One of the two flights in March will be analyzed in-depth for use in validation of the computer simulation. This task is highly schedule sensitive since the final performance assessment must be completed to support a production decision in October-November 1982.

Ground testing in natural and induced environments has been initiated and continued testing will be accomplished to determine the ability of the system to meet specification requirements.

The final performance assessment defines the overall accuracy, lethality, and infrared counter-countermeasure (IRCCM) capability for the system. The accuracy is measured by a simulation of the Stinger-Post missile and the lethality is determined by end game simulation. There will be 300 target engagements simulated. These engagements will cover low and high speed targets, maneuvering and non-maneuvering targets, and benign and countermeasure envirionments. Critical parameters will be varied to provide for normal missile functional variations.

An initial production readiness review is scheduled for March 1982. This review will focus on the status of planning efforts and organizational relationships of the Stinger-Post production program.

Planning for the production transition has been in progress for several months. Actions required for a fiscal year 1983 procurement are ongoing. Some of these actions will be described later in this presentation.

Completion of the development activities, including those above, will enable a final decision to be made on award of a production contract. It is expected that a review for production go-ahead will be held in October-November 1982 time frame.

STINGER-POST PRODUCTION TRANSITION

Plans or transition of Stinger-Post from development to production includes several elements which are needed to achieve a proven production capability.

Government documentation control will be restricted to selected specifications which control functional performance. Contractor control will be applied to drawings and other specifications with Government cognizance. This approach will permit incorporation of productibility changes more rapidly as the transition effort progresses. A validated technical data package will be placed under Government control at the end of the transition contract.

Other actions planned to establish production capability is the completion of the test equipment fabrication and validation, installation of production equipment and training of key manufacturing personnel required to produce critical parts of the system.

Actions planned which will assure the production capability has been adequately evaluated include the preparation of a Government approved proofing plan which describes how the production operation will be evaluated. All production paper de-

scribing manufacturing processes, manufacturing operations, inspection requirements and test requirements will be evaluated. Technology processes for items, such as the ultraviolet detector and the hybrid microelectronics, will be utilized in the transition fabrication operations to evaluate the procedures under manufacturing conditions.

SUMMARY

The Stinger system has been stabilized in the areas of production and cost and the development of Post is going well.

The Post program is constrained to 63 months. We think this program is achievable although the risk is high. FMS demands are continuing to rise.

Mr. CAMPBELL. I would like to ask General Maloney, will you comment on the issue made earlier with regard to why you decided to buy 176, as opposed to 244 missiles, for Patriot?

General BUNYARD. As you went through the joint conference in October of last year, there was an additional $50 million reduced from the Patriot budget. At that point in time the conference said buy nine fire units and 244 missiles. That was an unexecutable program because we had also directed testing associated with that, plus the fact we needed to maintain at least nine fire units.

Mr. CAMPBELL. Why did you find it was unexecutable?

General BUNYARD. We did not submit the requirement—our requirement at that point in the budget, which was 12 fire units and 376 missiles—I did not submit the requirement of 244 missiles.

Mr. CAMPBELL. Where did that requirement come from?

General BUNYARD. It came out of the joint conference, sir.

[The following questions were submitted to the witness to be answered for the record:]

IMPROVED-HAWK (I-HAWK)—REQUIREMENTS

Question. I understand that the Army has a requirement to retain an additional [deleted] of Ihawk. This is in addition to the [deleted] that were identified as a minimum requirement.

1. How would you deploy the [deleted].

2. Give the current personnel force structure, how would you man these additional units?

Answer. The Army review of the I-Hawk plan conducted in January 1982 resulted in the decision to retain a minimum I-Hawk force indefinitely. This force will provide [deleted] for the Rapid Deployment Force (RDF) and [deleted] deployed in the NATO Central Region protecting our critical rear assets.

This review also identified an additional requirement for I-Hawk involving [deleted]. These units would provide for an additional [deleted] to support the RDF and [deleted] to support the NATO Central Region.

An issue is whether the Army can afford the manpower to resource this additional requirement of [deleted]. The additional batteries and associated manpower (2723 spaces) are competing with other Army requirements and will undergo intensive review during the fiscal 1984-88 POM process.

AIR BASE DEFENSE

Question. The termination of Roland has raised some questions as to how the Army plans to provide for air defense of air force bases in Europe. As you know, the Air Force will use RAPIER systems for that purpose in the United Kingdom. It has been suggested that the Air Force may buy additional RAPIER systems and provide air defense for other overseas air bases.

1. How does the Army plan to provide for air defense of U.S. air bases?

2. What do you see as the role and mission of the Army in providing point air defense for U.S. air bases?

3. Could more Improved Hawks be used to help satisfy this requirement?

Answer. Rear area air base defense is now provided by Chaparral/Vulcan, I-Hawk, and Nike Hercules. As we modernize the force, it will transition to Chaparral/Divad, I-Hawk, and Patriot.

The specific void left by Roland's termination is being filled by the currently deployed Chaparral/Vulcan and I-Hawk. [deleted].

Roland deployed in the Central Region would have protected [deleted] in the rear area zone. [Deleted] will now be protected with this I-Hawk, Chaparral/Vulcan force. The air defense coverage for the air bases is being increased and with more capable systems.

The Army recognizes that it has the mission of point air defense for U.S. air bases. It has always been a high priority Army Air Defense mission involving the expenditure of large amounts of both dollars and manpower. The defense of our forward air bases is a critical matter that is accomplished in accordance with established SACEUR priorities and within our resources.

The Army has sufficient assets either on-hand or programmed to carry out its responsibilities to defend the main operating bases in the NATO Central Region. Retention of additional I-Hawk would be used to thicken the current defenses and to extend inplace coverage to those assets programmed for protection by early deploying air defense units from CONUS.

Patriot Requirements

Question. Last year $670 million were appropriated to procure 9 fire units and 244 missiles. I understand that the Army only plans to buy 176 missiles and 9 fire units. Why did the Army not buy the 244 missiles that were authorized in fiscal year 1982? How much of the $670 million will be used to fund your maintenance improved program which I understand will add over $400 million to program cost. Are increases in the cost of non-hardware items like changes in computer software (programs) effecting the Army's ability to purchase more hardware—missiles, launchers, etc.?

Answer. The Army's decremented budget request for fiscal year 1982 was $800.5M to purchase 9 fire units (FU) and 294 missiles. When the Joint Conference on fiscal year 1982 authorization met in Oct. 81, the procurement request was reduced by $50.8M and the Congress directed that the quantity of missiles be reduced from 294 to 244. Procurement of 244 missiles and 9 FU's was impossible within the funds provided. In order to accomplish scheduled testing, establish initial training facilities, and to meet European deployment objectives, the Army chose not to reduce the quantity of fire units below 9. Therefore, the quantity of missiles and the amount of tools/test equipment to be procured was reduced to absorb the $50.8M reduction which resulted in a planned procurement of 176 missiles and 9 fire units.

The improved maintenance program for Patriot was formulated during the fiscal year 1982 budget cycle, but was not included in the fiscal year 1982 budget request. The estimated program costs (approx $400M) are spread over fiscal year 1983 and beyond. Consequently, none of the $670M authorized in fiscal year 1982 will be used to fund the improved maintenance program.

The costs of non-hardware items like changes on computer software (programs) are included among the cost elements that make up the Patriot program cost estimate. With the exception of testing directed by the Decision Memorandum on DSARC III, Patriot has not reduced the quantity of hardware items purchased to absorb identifiable cost increases of non-hardware items.

Stinger Missile Problems

Question. Have you worked out all the Post problems? If not, why are we buying 44 more missiles at an average cost of about $966K per missile?

Answer. The technical problems encountered in the flight test program to date have been resolved. In fact, the last two missiles fired scored direct hits.

Stinger Second Sourcing

Question. Since the Army plans to buy over 90,000 Stingers, only about 6,400 of which will be delivered by the end of the fiscal year 1982 funded delivery period, why does it not make sense to second source? Would you provide the committee with a copy of the economic analysis which showed second sourcing to be too costly?

Answer. The Army only plans to buy 46,000 Stingers, of which 34,000 would be Stinger-Post. A preliminary economic analysis indicates that over $100 million would be saved over the total program by persuing a sole-source strategy beginning in fiscal year 1985. Also, the potential of applying the advantages of multiyear pro-

curement can be realized. A copy of the final economic analyses will be provided to the committee upon completion.

PATRIOT TRUE COST

Question. It is not clear from the examination of the principle source documents—P-1, SAR, and Congressional Data Sheets—what the true cost of the 376 missiles, 12 fire control sections, and 57 launchers is. The SAR says $881.0M for procurement with the unit cost of one fire control section at $17.76M. The P-1 document says that the unit cost for the fiscal year 1983 request is $2.14M and the data sheets say $2.34M. Would you explain why these differences exist and provide a complete break out of the $805.1 million requested for fiscal year 1983.

Answer: The Firing Control Section (FCS) is a subset of the fire unit and contains one radar set, one engagement control station and one electrical power plant. The SAR breaks the system costs down to this level but the P-1 and Congressional Data Sheets do not. A comparison between documents at the FCS level is not possible. To make a comparison between the documents a common baseline must be used. If this baseline is missiles and fiscal year 1983 procurement unit cost the following is reported:

[Dollars in millions]

Document	Request	Missiles	Fiscal year 1983 procurement unit cost
SAR	881.0	376	$2.34
P-1	[1] 805.1	376	2.14
Data sheets	881.0	376	2.34

[1] Does not include $75.9M for initial spares which would bring this total to 881.0.

The request of $881.0M is to procure the fiscal year 1983 Patriot program and not just missiles as the matrix would imply. The following is a breakout of the $805.1M request ($881.0M with spares):

Task	Quantity	Dollars
Missile with warhead	376	241.8
Fire control sections	12	188.2
Launchers	57	56.7
Other (ICC, CRS, Bn/btry maint gps ams tng devices)		48.7
GFE		71.2
Contractor engineering services		43.9
Government engineering services		30.7
Testing		7.7
Maintenance diagnostics		4.1
Software maintenance		10.3
Tooling and test equipment		50.0
Integrated logistic support		51.8
Total		805.1

ROLAND DEPLOYMENT

Question. The termination of the ROLAND program results in only 1 battalion of 3 batteries (27 fire units) of ROLAND being available as opposed to the original 4 battalions. How do you plan to deploy these batteries? Will some be provided to support the RDF role? Since the current ROLAND chassis is too wide and tall to be transported on a C130 or C141, how will they satisfy RDF requirements?

Answer. The Army is planning to deploy the ROLAND battalion as an RDF battalion stationed at Ft. Bliss, TX. The 27 fire units are to be mounted on an M812A1 truck. In this configuration they are air transportable by C130 or C141 aircraft.

HELICOPTER THREAT

Question. Is the Army doing anything specifically aimed at countering the increasing helicopter threat?

Answer. The Soviet armed helicopter threat is increasing in both quality and quantity. The Army has developed the DIVAD Gun with the mission of providing air defense for the forward maneuver forces of the heavy divisions against both fixed wing and helicopter threatrs. DIVAD has the capability of detecting and acquiring both threats with on-board radar systems and engaging them utilizing twin 40mm L70 BOFOR guns mounted on an M48A5 chasis. The on-board radar system is key to DIVAD's quick reaction capability which gives the system the ability to engage an attack helicopter. The radar system is backed up by a visual acquisition mode. On 22 March 1982, the ASARC recommended Divad enter production. IOC will be March 1985.

Mr. STRATTON. Thank you very much, gentleman. I think that will conclude our hearings and we are going to be here on Monday, I think.

We will stand adjourned until 2:30 on Monday.

Thank you very much.

[Whereupon, at 4:45 p.m., the subcommittee was adjourned, to reconvene at 2:30 p.m. on Monday, March 22, 1982.]

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CONTINUATION OF ARMY WEAPONS PROCUREMENT PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Monday, March 22, 1982.

The subcommittee met, pursuant to call, at 2:40 p.m., in room 2212, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

Today the committee will continue its review of the Army's tracked vehicle programs. As I stated last week, to support these programs the Army is requesting $1 billion more this year than was appropriated in fiscal year 1982. This reflects the transition of several major programs into full-scale production, and this afternoon, we will be discussing two of those programs: The Bradley fighting vehicles—formerly the infantry and cavalry fighting vehicles—and the multiple launch rocket system [MLRS] programs.

The committee considers the Bradley fighting vehicles to be an important part of the Army's modernization program. The committee is, however, concerned that while the Army has requested funds for 600 vehicles in fiscal year 1983, it has reduced its fiscal year 1984 requirements to 555 vehicles. The committee would like the Army to explain why its fiscal year 1984 requirements have been reduced.

The multiple launch rocket system program has been one of the Army's more successful programs. It has been in low rate, initial production and the fiscal year 1983 request reflects a steady building toward full-scale production.

The committee would like the Army to identify and discuss the characteristics of this program which account for its success. Our witnesses this afternoon are Maj. Gen. James P. Maloney, Director of Weapons Systems Office, Office of the Deputy Chief of Staff for Research, Development, and Acquisition; Brig. Gen. Donald P. Whalen, Program Manager for the Bradley Fighting Vehicles; and Col. Monte Hatchett, MLRS Program Manager.

General Maloney, I would also like for you to briefly discuss the field artillery ammunition support vehicle [FAASV] program. Since this is the first year procurement funds have been requested for this program, I think the committee should review this matter.

Before you proceed, General, Mrs. Holt has a statement.

Mrs. HOLT. Thank you, Mr. Chairman.

We are certainly very interested in hearing an explanation of the cost growth in the Bradley fighting vehicle program. We need some explanations so that we can defend it.

Also, I would like to hear of the possible savings which may result from second sourcing and how we are going to finance the second source.

I think these are important systems that we are talking about today, and we want to get out there as quickly as possible. So give us a good argument so that we can defend you on that.

Thank you, Mr. Chairman.

STATEMENT OF MAJ. GEN. JAMES P. MALONEY, DIRECTOR OF WEAPONS SYSTEMS OFFICE, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, U.S. ARMY

General MALONEY. Mr. Chairman, Mrs. Holt, gentlemen, with your permission, we will discuss first the Bradley and then the MLRS and then follow with FAASV.

M2/M3 BRADLEY FIGHTING VEHICLE

In October 1981, the M2 infantry fighting vehicle and the M3 cavalry fighting vehicle were designated the Bradley fighting systems in honor of the General of the Army, Omar Nelson Bradley. This designation is I believe far more than symbolic. Throughout his illustrious career, General Bradley was recognized as the "soldier's general" and we are convinced that if alive today, he would be very proud of his namesake because the Bradley does give the infantry and cavalry soldier a capability the Army has not had before.

The Bradley is the ideal partner for the M1 tank on the battlefield. The Bradley's stabilized 25-millimeter cannon can defeat enemy infantry fighting vehicles and suppress enemy antitank weapons. From an over-watch position, it can also provide long range tank killing with its TOW missile system.

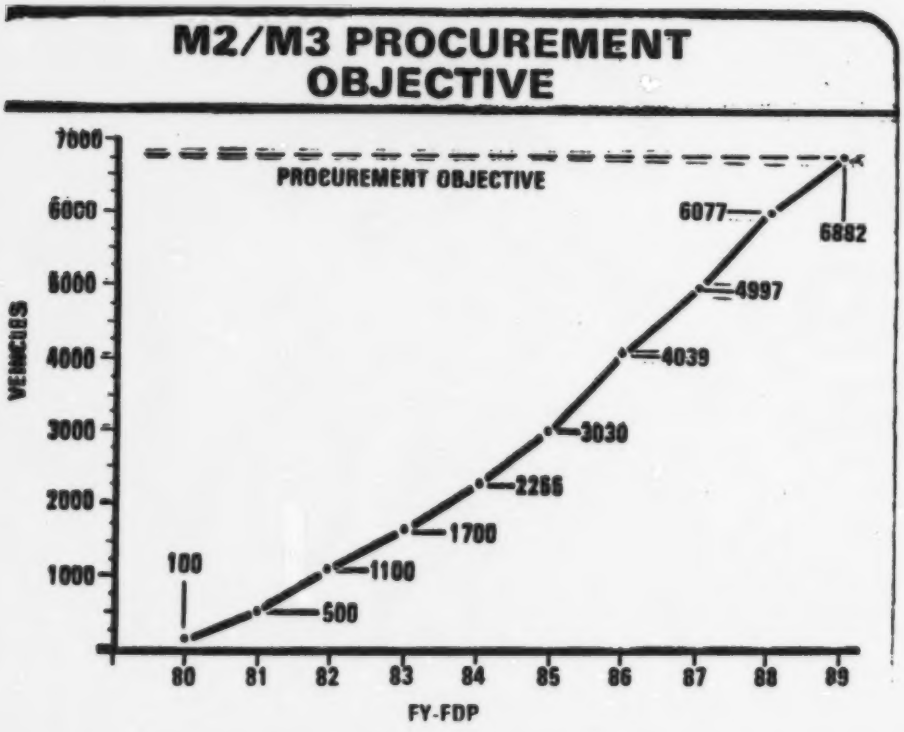
Finally, and of equal importance, the Bradley can support dismounted squad maneuvers by laying down a base of fire with the 25-millimeter cannon and 7.62-millimeter coaxial machinegun.

The Army's fiscal year 1983 procurement requests for 600 vehicles constitutes our fourth year of Bradley production. Through fiscal year 1982, we have purchased 1,100 of these important new systems.

M2/M3 FISCAL YEAR 1983 BUDGET REQUEST

Provides for: Procurement of 600 vehicles; 532 guns, 25mm; 2.5M rounds ammunition, 25mm; and spares. Provides for fielding of M2/M3 in CONUS and Europe and development—TOW 2 and NBC modifications.

This chart summarizes the provisions of our fiscal year 1983 budget request. In addition to a buy of 600 vehicles, we will buy the guns, ammunition, and spare parts to support fielding of the Bradley. Within 2 months—May of this year—we will start fielding the Bradley to our training bases at Fort Benning and Fort Knox. This will be followed in March 1983 with the equipping of our first battalion at Fort Hood, Tex., and 6 months later, in September 1983, the equipping of our first battalion in Germany.



The ramp-up and production delivery scheduled for the M2 and M3 are shown on this chart. As I stated earlier, we are currently under contract for 600 vehicles and the fiscal year 1983 procurement brings the total to 1,700. We are currently facilitized to production deliveries of 50 vehicles per month. We intend to increase the production rate to 90 vehicles per month by fiscal year 1986.

This will enable us to achieve our procurement objective of 6,882 vehicles by fiscal year 1989. Before turning it over to General Whalen, the program manager, I would like to mention a significant achievement in this program since we briefed you last year.

In May 1981 the Army accepted delivery of the first production M2 vehicle. This delivery met the 1977 congressional mandate stated in Public Law 95–79, which required the Army to be in production by May 1981. This represents a period of less than 5 years from engineering development contract award to acceptance of the first delivery item. This was made possible by intensive management and virtually no configuration changes following the design freeze in early 1977.

Sir, unless you have questions, I will turn it over at this time to Brig. Gen. Don Whalen.

Mr. STRATTON. Do we have any questions?

OK.

WRITTEN STATEMENT OF BRIG. GEN. DONALD WHALEN

Good afternoon, Mr. Chairman, I am Brigadier General Donald Whalen, program manager of the Bradley fighting vehicle systems. Again, I am pleased to have an opportunity to present to you a report on the progress and status of the Bradley

program. As you see, the program has a new logo. This is so, because the M2, infantry fighting vehicle, and the M3, cavalry fighting vehicle, were designated Bradley fighting vehicle systems at a dedication ceremony held at Fort Meyer in October of this past year. The Army was particularly pleased that these fighting vehicles, so essential for the success of the combined arms team on the modern field of battle, could be named in honor of General of the Army Omar Nelson Bradley, the soldier's general.

This viewgraph depicts the systems which comprise the Bradley program. The vehicles at the top, the M2 infantry fighting vehicle (IFV) and M3 cavalry fighting vehicle (CFV) appear identical externally but are differently manned to accomplish their unique missions. The IFV allows the infantry squad, under direction of their squad leader to fight in mounted combat, or to deploy dismounted as terrains and enemy dictate. The CFV carries the cavalry squad as they perform their roles of reconnaissance, screening and economy of force. The primary weapon for the IFV and CFV is the externally powered, dual feed, 25mm gun shown on the left. This gun has demonstrated superb accuracy and its ammunition exceeds the required destructive capacity. The 25mm is supplemented by the M240C, 7.62mm coaxial machine gun; the same weapon found on the army's tanks. Both guns are fully stabilized and can, therefore, be fired accurately on the move. 25mm ammunition and fuze are shown above the gun and support the Bradley and other Army programs.

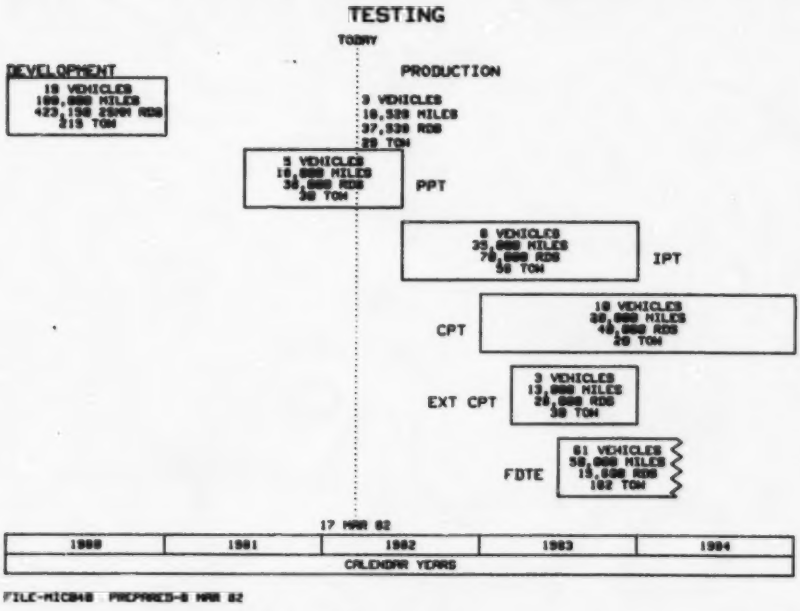
Now shown separately, but visible on the left side of the turret of each vehicle is the TOW launcher. The TOW subsystem proliferates an anti-tank capability to the degree necessary on a battlefield fought by modern mechanized combatants and allows the Bradley to reach out to ranges greater than three kilometers, day or night, and destroy any armor threat.

The firing port weapon at the upper right is used only on the infantry fighting vehicle and procurement was completed with the fiscal year 1982 appropriation.

Three automated test sets appear at the lower right. Two of these, the simplified test equipment (STE) for the M1 and Bradley vehicles and the direct support electrical system test set (DSESTS) share commonality with those used by Abrams tank. The third, TOW subsystem support equipment (TSS-SE) is unique to the Bradley program and will provide fault diagnosis for the TOW missile subsystem.

This chart shows you the major contractors responsible for producing the key elements of the program. We have nine major contractors with production facilities in six states. I am proud to say that this is a working "team" pulling together to meet the Army's requirements.

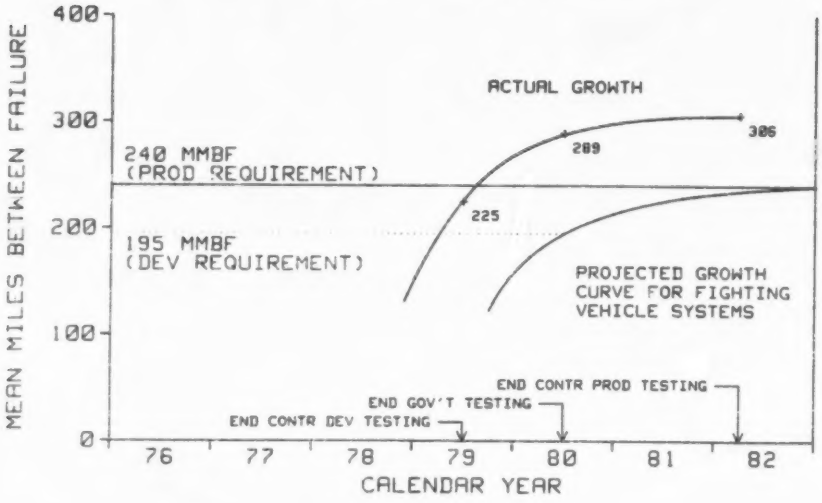
The master schedule provides a program overview from design through the fifth year of production. Since your last hearings, our first production vehicle was delivered in May of 1981 as directed by Public Law 95-79, dated 30 July 1977. This delivery was accomplished despite an 11-week strike at our prime contractor, FMC Corporation. The schedule reflects impact from that strike as depicted by a stretch-out of the first year's deliveries to July 1982; however, we will be back on schedule in May of 1983, the end of the delivery period of vehicles procured with fiscal year 1981 funding. We are conducting final tests of early production vehicles and soon will begin Government initial production testing, abbreviated as IPT on the chart, in which we will verify that production vehicle meet Government requirements as defined in our contract with FMC and our materiel need (NM) document. We are currently under contract for the 1,100 vehicles through fiscal year 1982, and this year's procurement will bring the total to 1,700. We intend to build to a production rate of 90 vehicles per month by fiscal year 1986. Not shown here, but key in the future of the vehicle acquisition is a determination on a second source producer for the vehicle. An independent Army board is now reviewing production analysis contracts awarded 1 year ago and will present their results to an Army review chaired by the Under Secretary of the Army. A decision will be made on the cost effectiveness of competition and the requirements for a mobilization base. The Office of the Secretary of Defense will review this decision in May and a report on this will be reported to Congress no later than the end of June. The contracts for fiscal year 1981 and fiscal year 1982 have recently been agreed to by the Army and the contractor as to terms, conditions, and price. As a result, I feel confident that we can now deliver, within the budgets requested, the necessary quantity of vehicles. Gun deliveries are also shown. We are executing the third year option of a 3 year competitive production contract made during completion of development. The gun quantities, for fiscal year 1983 and fiscal year 1984 will put us in line with vehicle production. Ammunition production, shown on the botton line, reflects execution of a 3 year contract, followed by future procurements in order to meet training and war reserve requirements. Additionally, we have added a second source producer of ammunition, Honeywell Corporation.



I will now turn to testing and review what we have accomplished and what we plan. During the past year we completed or development testing in it's entirety to include all required vulnerability tests. As you can see during development of the Bradley we operated 19 vehicles, accumulated 189,000 miles, fired almost half a million 25 mm rounds and 215 TOW missiles. Today, we are completing contractor testing of production vehicles. This, when completed, will have tested 5 vehicles for 18,000 miles, 36,000 rounds and 30 TOW missiles. We have been very pleased with the results. Initial Government production testing at Aberdeen Proving Grounds, will begin in June to demonstrate that production vehicles have met requirements. In addition, we will continue to check quality with comparison production tests, noted as CPT. Finally, after fielding our first battalion at Fort Hood, Tex., we will run it through a force development test and evaluation. This will include independent analysis of the complete logistic support packages.

BRADLEY
FIGHTING VEHICLE SYSTEMS

SYSTEM RELIABILITY GROWTH



This chart depicts requirements, projections, and demonstrated reliability of the fighting vehicle. During development, our requirement was 195 mean miles between combat mission failure. We achieved 289 mean miles. Our production requirement is 240 mean miles between failures. Today in contractor testing, the Bradley is demonstrating 306. You can see that this substantially exceeds both projected growth and requirements. FMC and its subcontractors have now demonstrated the ability to transform from the development prototype vehicles, into production with no degradation in performance. This is a key milestone. In the next few months, the Government initial production testing will demonstrate whether we are able to carry this production quality beyond the limited monthly quantities characteristic of production start-up and into the double digit monthly deliveries as production ramps to its first plateau of 50 vehicles per month.

RELIABILITY RESULTS

[MMBF—mean miles between failures]

	Requirement	Contractor test experience
Mobility	(620)	928
Firepower	(480)	498
Support	(2,200)	6,631
Total	240	[1] 309

[1] MMBF equal 306 when main gun system problems are normalized at 2 rounds per mile per mission profile. Results of data thru Mar. 2, 1982, vehicle miles 18,567, 25mm rounds 36,079.

This chart breaks out the reliability results into the major categories of mobility, firepower, and support. We exceed all requirements at the system and subsystem level.

Production through February—20 vehicles; 41 25mm guns; 1,100 M231 firing port weapons; 753,000 25mm rounds; and 2 test sets.

This shows production deliveries. I mentioned that FMC delivered it's first vehicle in May of 1981 during a strike. This strike caused a stretch of first year deliveries

and as a result we are just beginning the ramp to planned production levels. This month, March, we are scheduled to deliver 10 vehicles and this first double digit month is an important one. FMC has proven with the M113 program an ability to deliver tracked vehicles in volume and with high quality. The pains of production start up of the Bradley are now subsiding and the signs are auspicious for a repeat performance. GE and Hughes Aircraft, the principal subcontractors, have also delivered their components so as to permit timely induction on the FMC line. 25mm guns, produced by Hughes Helicopter Incorporated, have had start-up schedule problems but these too are easing and they have now delivered 41 guns. The firing port weapon built by Colt Industries is being delivered well ahead of immediate requirements. 25mm ammunition, currently being produced by Ford Aerospace, is being delivered to support testing and early training requirements. Additionally, Honeywell Corporation, our fuze developer, manufacturer has been establishes as a second ammunition source and will begin delivering rounds with the fiscal year 1982 buy. They will compete in the out-years with other qualified manufacturers for 25mm ammunition production.

FIELDINC

To TRADOC: May 1982. To FORSCOM: March 1983. To USAREUR—7th ATC: March 1983. 1st BN Hand-off September 1983. POMCUS: February 1984.

I have shown next the key milestones to fielding the Bradley during the next two years. Our first vehicles will be delivered to the training and doctrine command, TRADOC, in May of this year. This will start the training base. The next milestone is our delivery to FORSCOM—or forces command, those troops stationed in the United States. The first battalion will be equipped at Ft. Hood, Texas, in March 1983. Not shown are the many detailed tasks which we have to accomplish between now and then. These include final manual preparation, establishment of standard Army supply and maintenance systems, production and fielding of test equipment to support our vehicles, and training of personnel to bring it all together at Ft. Hood. The next bullet shows fielding to Europe. We will be starting with the 7th Army Training Center in Vilseck, Germany. The first battalion in Europe will receive their vehicles in September. Two years from now we will being filling the pre-positioned material configured in unit sets or POMCUS.

BFV - FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY83 $)

FY72	1.017
FY82	1.466
FY83	1.541

COST GROWTH

FY82-83	5.1%
TOTAL	51.5%

	FY81 & PRIOR	FY82	FY83	FY84	TO COMPLETE	TOTAL
RDT&E	342.8	103.4	50.5	33.5	31.4	560.8
WPN SYS PROC	1128.1	1076.7	1210.4	962.9	8680.4	12838.5
QUANTITY BUY	520	600	600	555	4627	6902

$(000,000)

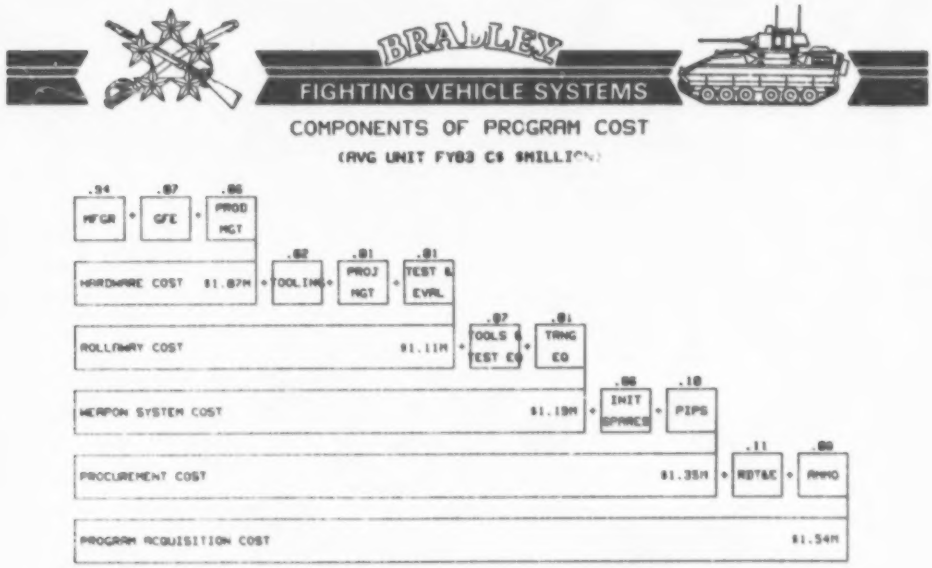
This chart depicts the Bradley financial summary. The program unit costs, in constant fiscal year 1983 dollars, is in the upper left corner. The fiscal year 1972 figure is based on development estimates, and along with the fiscal year 1983 cost will be covered in greater detail later. The total program unit cost change in fiscal year 1983 constant dollars, in the upper right corner, is about 52 percent since fiscal year 1972. Major reasons for this are estimating, engineering and support changes. The data in the lower portion of the chart is taken from our December 1981 SAR.

A detailed breakout of the fiscal year 1983 weapon system procurement request is shown on the following chart.

Fiscal year 1983 procurement request

	Millions
600 vehicles	$842.5
291 Infantry fighting vehicles (IFVs)	
309 Cavalry fighting vehicles (CFVs)	
66 Simplified test equipment—M1/BFVS (STE)	
25 Direct support electrical system test sets (DSESTS)	
28 TOW subsystem support equipment (TSS–SE)	
532 25mm guns	33.4
2.5M 25mm rounds	104.6
424K Armor piercing discarding sabot (APDS)	
540K High explosive incendiary (HEI)	
1543K target practice tracer (TP)	
Initial spares	29.9

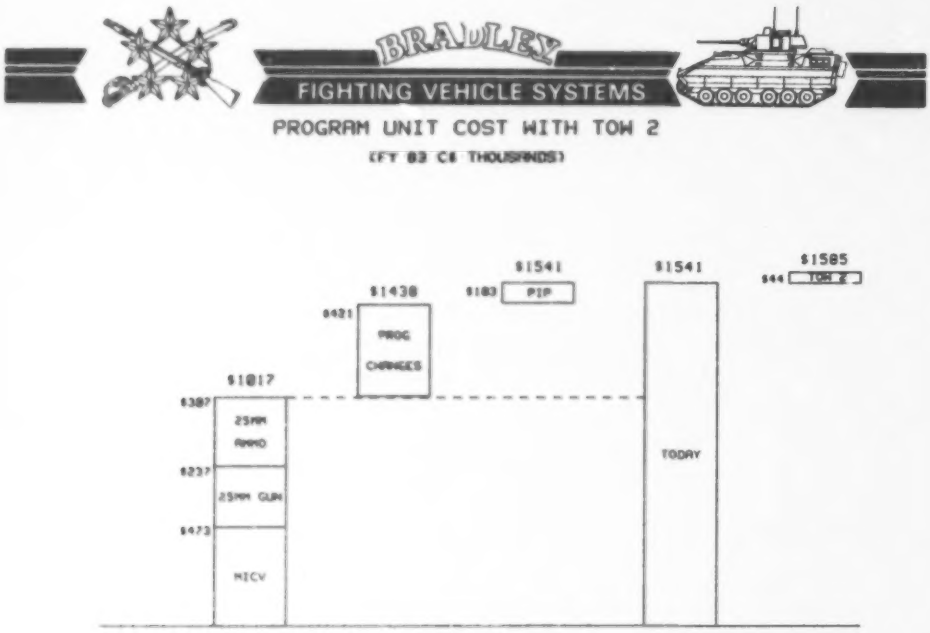
Our fiscal year 1983 procurement request is shown here, 842½ million dollars is required to buy 600 vehicles plus required support equipment, primarily, automated test equipment. In addition, we have asked for 33.4 million dollars to procure 532 25mm guns. 104.6 million dollars is used to procure 2.5 million rounds of 25mm ammunition of the types shown on the chart. This supports training and war reserves stocks for the 25mm gun. For initial spares, we have requested 29.9 million dollars.



I would now like to discuss acquisition costs for our total program.

This shows how one arrives at some of the different cost definitions used by the press or which appear in our selected acquisition report, the SAR. The first block, hardware costs, show that over the full buy of 6,882 vehicles, it will cost approximately $1 million, expressed in fiscal year 1983 dollars to buy an IFV or a CFV. This consists of manufacturing costs, Government furnished equipment and management of production. To arrive at rollaway cost, similar to what one would pay in buying a personal automobile, the cost for tooling, project management, and test and evaluation must be added. This brings the sum to 1.11 million dollars. Weapon

system costs, the next block, includes special tools, test, and training equipment, and totals 1.19 million dollars. Procurement unit costs add the initial spares and product improvements; these, when added bring the total to 1.35 million dollars. Finally the program acquisition costs includes the research, development test and evaluation done previously and the ammunition development and procurement. Therefore, we arrive at a bottom line figure of 1.54 million dollars. This cost represents the total acquisition on a unit basis.



Another way of looking at cost change is to go back to our original 1972 baseline vehicle, the mechanized infantry combat vehicle (MICV). Its cost expressed in fiscal year 1983 dollars is $473,000. The 1972 vehicle did not include the 25mm gun, so we have added in the subsequent changes that incorporated the 25mm and its highly accurate stabilization system. Finally, the baseline cost includes an amount for the 25mm ammunition. Our baseline then costs 1,017,000 in 1983 dollars. We have made program changes that amount to another 421 thousand dollars. These changes can be categorized as a 145 thousand dollar increase in support, a 586 thousand increase in estimating, 116 thousand increase in engineering, and a 26 thousand dollar change is schedule. These unit cost increases are partially offset by the effects of a quantity increase from 1205 to 6903 with attendant average cost decrease of 452 thousand dollars. Further changes have been projected in our current program. These are planned product improvement PIPs. These will compete with other army priorities for funding in the out years, but this report assumes that all will be funded. These amount to another 103,000 dollars to bring total program unit cost to 1.541 million dollars. There is a final change that will appear in subsequent programs, but is not in the current program acquisition cost. This is the optimizing of our fire control system to take complete advantage of the capabilities of the TOW 2 missile. Development started with fiscal year 1982 funding. The right block shows the impact of the unit cost in procurement.

SUMMARY

Early production vehicles performing above requirements. Production ramp to rate in progress. Fielding activities intense: First batallion starts new equipment training in March 1983. Fiscal year 1980, 1981 and 1982 programs being executed within budgeted figures.

In summary, we have transitioned from development into production. Testing to date indicates we have technically sound vehicles performing beyond their requirements. We made our May 1981 production delivery as directed by Congress and are

now beginning to ramp to our first production plateau of 50 vehicles per month. We are continuing all activities required for initial fielding and will begin to deliver to the training base in May so that we can field at Fort Hood in March of 1983. We now have 3 years of procurement under contract for a total of 1,100 vehicles. We are executing those contracts within budget and I feel confident that the fiscal year 1983 budget presented to you will be negotiated and executed as in the past. Thank you for the opportunity to present the program. May I answer any questions?

STATEMENT OF BRIG. GEN. DONALD P. WHALEN, PROGRAM MANAGER, BRADLEY FIGHTING VEHICLES, WARREN, MICH.

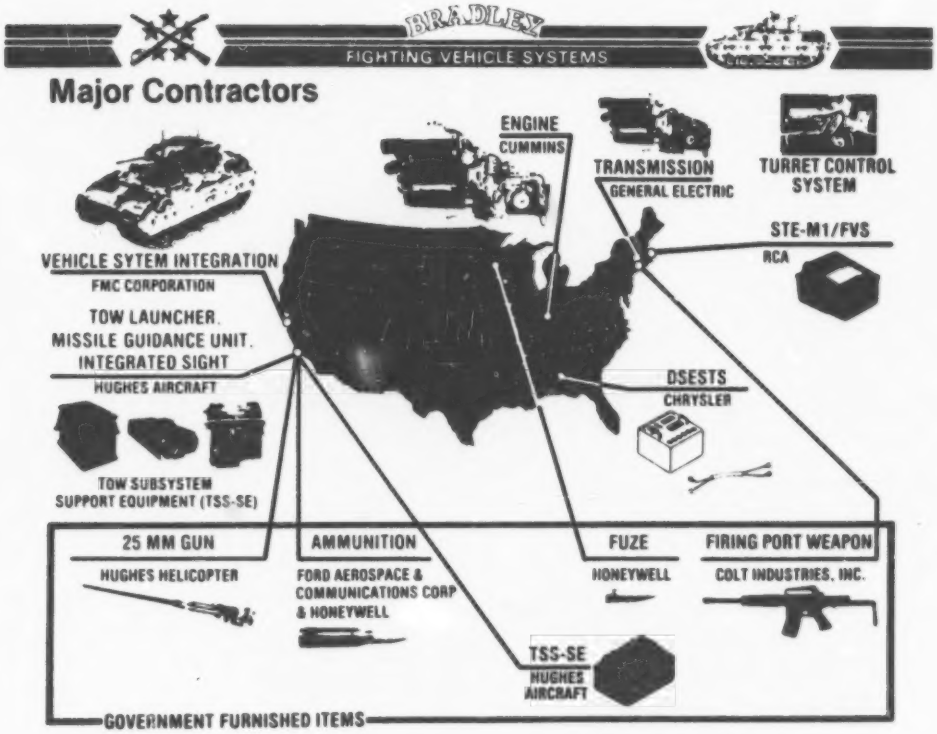
General WHALEN. Good afternoon, Mr. Chairman. I am very pleased to have the opportunity to present to you a report on the progress and status of the Bradley program.

This Vu-Graph depicts the system which comprises the total program. The vehicles at the top are the M2 infantry fighting vehicle and the M3 cavalry fighting vehicle.

They are armed with the externally powered dual fed-25-millimeter gun shown on the left. This gun has demonstrated superb accuracy and its ammunition exceeds required destructive capacity. The 25 millimeter is supplemented by the 7.62 millimeter coaxial machinegun, the same weapon found on the Army's tanks. Both guns are fully stabilized and can be fired accurately on the move.

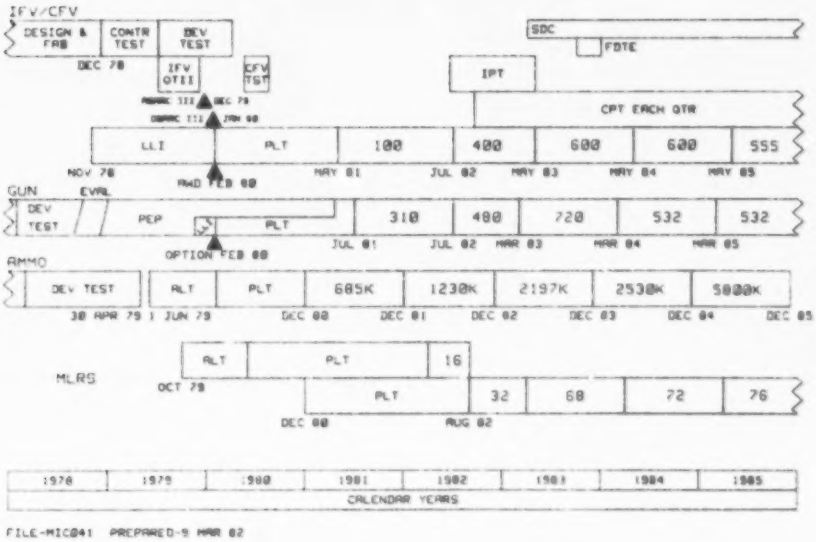
Visible on the left side of the turret is the TOW launcher. The TOW subsystem proliferates an antitank capability to the degree necessary on a battlefield fought by modern mechanized combatants.

As General Maloney indicated, it reaches out to ranges greater than 3 kilometers, day or night, and destroys any armored threat.



We have nine major contractors with production facilities in six States. I can say this is now a working team pulling together to meet the Army's requirements.

BFVS MASTER SCHEDULE



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The master schedule provides an overview——

Mr. STRATTON. Why don't you show us the vehicle here, General? I don't see the vehicle except just a small picture in there. I would like to see what the thing looks like.

General WHALEN. All right, sir.

Mr. STRATTON. Don't you have some breakdown? What does it look like inside? What is it supposed to do? You have this stuff memorized, but we want to know what the vehicle looks like, what is the difference between the infantry vehicle and the cavalry vehicle?

General WHALEN. Yes, sir.

Mr. STRATTON. What is the improvement over the 113?

General WHALEN. What I can do——

Mr. STRATTON. Put it in words of simple language instead of following the script.

General WHALEN. OK. Unfortunately, I don't have a Vu-Graph. I have not brought one with me that shows the internal armaments. I wish I did have it.

Mr. STRATTON. We don't just automatically rubber stamp this stuff.

General WHALEN. Let me go through the infantry first and then the cavalry.

In the case of the infantry version, the key is the two-man turret. This provides a place for both the commander and the gunner to operate. Experience with previous one man turrets and in particular the German Marder fighting vehicle, indicates that a one-man turret places more of a burden on the commander of that vehicle than he can realistically be expected to assume. He can't both fight the vehicle and command the vehicle at the same time.

By having the two-man turret, as is the case with the Bradley, we have split those duties. The commander can command and the gunner can operate the weapon station. When the commander sees something that is of overriding concern to him, he can intervene, take command of this turret from the gunner. If he has acquired a target while the gunner is busy firing at a lesser threat, he can slew that turret over and bring fire himself on a more immediate and more dangerous threat.

The driver, of course, drives in either the infantry or cavalry version. In the case of the infantry, the other——

Mr. STRATTON. The vehicle is designed to transport infantry, isn't it? You are not trying to make it into another tank, are you?

General WHALEN. No, sir. We are not trying to make it into a tank, but it is designed to do more than transport infantry to the edge of the battle. It is designed for the infantry to fight. The tactics are different than they would be were it a light tank, but they do fight the battle mounted.

Mr. STRATTON. How many infantry is it supposed to carry?

General WHALEN. Sir, it carries a nine-man infantry squad.

Mr. STRATTON. Nine men?

General WHALEN. Yes sir.

Mr. STRATTON. How does that compare with the Soviet vehicle?

General WHALEN. Sir the BMP is capable of carrying 11 people. However, having ridden in one myself, squashed in like sardines——

Mr. STRATTON. Somehow it strikes me that it is a little strange to have nine infantrymen inside just riding along as passengers while you are trying to fight something on the outside. The purpose of the vehicle I would think would be to put the infantryman in the position where they can do the infantry's job.

General MALONEY. May I take a crack at this?

Mr. STRATTON. Yes.

General MALONEY. Let's have a slide of the 113 armored personnel carrier.

Sir, this is the armored personnel carrier that is in our force today. It provides ballistic protection against small arms, 7.62 millimeter in size. It has a caliber 50 machinegun on top. It is a means of transporting the infantryman to a position where he can dismount and then enter the battle. It is kind of a taxi to get him there and to provide him minimum protection.

This vehicle has been in production for many years. It is an excellent vehicle. It does a good job for what it is designed to do. We want to move from the 113 personnel carrier to a fighting vehicle, and I emphasize the word fighting because the vehicle we want to replace it with, which we are in production with now—General Whalen's vehicle—does much more than simply transport the squad to battle.

Now, the squad cannot fight. The squad cannot influence the battle from the inside of this vehicle. The squad must be dismounted to have any influence on the battle.

Now, let's look at the difference between this, which is a kind of battle taxi that takes you and lets the squad get there and then get into action, and think about the differences between it and the fighting vehicle that General Whalen is procuring.

The fighting vehicle does a great deal more than simply transport troops into battle. It moves right along with the tank, the M1 tank, and provides the ability for the fighting vehicle, for example, to destroy its counterpart vehicle, the BMP. It can punch holes through the BMP, stop it and destroy it at a greater range than the BMP can destroy this vehicle. So it now provides a partner to the tank that can kill its counterpart vehicle.

Additionally, on top of this vehicle is the TOW, the tube launched optically tracked wire-guided antitank missile.

Mr. STRATTON. While you are carrying on this fight, you have nine people locked up inside?

General MALONEY. No sir.

Mr. STRATTON. That isn't the size of a squad. It is 11, as I understand it.

General MALONEY. The squad size is nine men in the organization that is equipped with this vehicle.

Mr. STRATTON. In other words, you are cutting down the number of infantry to fit the size of the vehicle?

General MALONEY. No sir, the number of infantry do fit the size of the vehicle, but the number of infantry combined with this vehicle, can do a great deal more than the 11-man squad of yesterday that was transported in the 113.

Now, as I was saying, the squad in——

Mr. STRATTON. When do they get out and get their feet wet?

General MALONEY. If necessary, when they get to an objective and have achieved that objective, they fan out and control it better, but the squad can fight on its way to the objective. They have firing port weapons and six firing ports inside the vehicle which they can observe what is going on, which is something they can't do from the 113, and they can fire their weapons and influence the battle from inside the vehicle.

So they not only are a part of the fighting capability of the vehicle but they are transported within it.

Mr. STRATTON. This thing has been used primarily for amphibious operations, hasn't it?

General MALONEY. No sir.

Mr. STRATTON. Getting troops ashore and then they get out?

General MALONEY. No sir, although it is capable of swimming, it would not be considered an amphibious surf crossing kind of vehicle. It can swim across a river or lake if the current is not too great in the river, and it can move at reasonable speeds when it does that, nearly 5 kilometers per hour. It does have amphibious capability or river crossing capability.

But it has a much higher level of protection than does the 113. It has much greater speed capability, and it decreases the Soviet interest in the tank alone and makes the Soviets pay attention to this vehicle which can destroy tanks, can destroy BMP counterpart vehicles, and is a very formidable fighting machine in itself.

The force when equipped with the Bradley fighting vehicle, as compared with the force equipped with the 113, is much more formidable.

Mr. STRATTON. I just don't understand the doctrine that you have to have another tank along to protect one tank and have it filled up with infantry. That isn't my understanding of what tank war-

fare is. But maybe you have modernized the thing and made it a little bit more easy than it used to be.

General MALONEY. We think we have.

Mr. STRATTON. Did the Israelis use this in the battle against the Egyptians?

General WHALEN. No sir.

General MALONEY. Not this vehicle.

Mr. STRATTON. The 113?

General WHALEN. Yes sir.

Mr. STRATTON. How did they use that? Is there any difference in the doctrine between the two?

General WHALEN. Yes sir, there is. You may recall that at the start of the heavy engagements in the last Israeli war, the Israelis had a great deal of trouble because I believe they violated the doctrine that the U.S. Army has held very dear since the end of World War II, and that is the combined army doctrine that you don't do well unless you mix your tanks, your infantry, and field artillery team together. In their haste to close with and destroy the enemy, they had their tanks ahead and their tanks paid quite a price for that in the initial meeting engagement.

They stopped that, got back and, of course, as you know, did very well. But they did allow their tanks in that case to outrun both the infantry and artillery.

The vehicle is designed not to let that happen with the infantry portion of the M1 fighting vehicle team. Keep that team together. They do complement each other and they do provide a capability which when added together, is much greater than the sum of the two parts.

Mr. STRATTON. What is the cost of this?

General WHALEN. Sir, expressed in fiscal year 1983 dollars, this year dollars that we are here for today, it is $1.11 million for rollaway costs. That is rollaway, with everything on the vehicle.

Mr. STRATTON. How many of these are you asking for? Five hundred and some?

General WHALEN. No, this year we are asking for 600. It will bring the total buy to 1,700.

Mr. STRATTON. $600 million for these and the tank is going to cost not a great deal more than that. You were telling us that it wasn't true it was going to cost $2.7 million, it was going to cost less than that?

General MALONEY. That is right, the rollaway cost of the tank is about $1.8 million.

Mr. STRATTON. What about the other one then, the cavalry one that only has four or five people?

General WHALEN. Five people. It has the same driver.

Mr. STRATTON. It is going to cost $1 million to carry five people?

General WHALEN. Yes sir.

Mr. STRATTON. What is the point in calling it cavalry? You are going to be working with the tanks as well. So what is the difference between the two?

General WHALEN. Sir, the traditional role of the cavalry remains unchanged with this vehicle, and that traditional role is to do reconnaissance, to do the scouting on the edge of the battle and to perform what the Army calls, maybe too much in a jargon way, an

economy of force mission. When you concentrate your combat power one place where it is decisive, you have got to leave a little bit of your force out there where the rest of the bad guys are. That is economy of force. The cavalry will continue to do that. The economy of force role with the cavalry——

Mr. STRATTON. The armored cavalry is the tanks, aren't they?

General WHALEN. No sir.

Mr. STRATTON. This is an independent reconnaissance vehicle?

General WHALEN. The present organization of the battle that will get this are split two ways. The division's cavalry squadron, the only cavalry squadron in each division will have these vehicles exclusively It will have not one M1 tank.

Mr. STRATTON. We don't have horses now. With the 1st Cavalry Division in Vietnam, it was the helicopters that were pretty much the cavalry. The 1st Cavalry Division out in the Pacific was the tanks. Why do we have to have another million dollar tank to go along with every tank? It looks to me as though what you are doing is reviving the Sheridan. You discarded it about 4 or 5 years ago, and now we are starting in with something else.

General WHALEN. No sir, I don't believe so.

Mr. STRATTON. Well, can't you explain to me what the cavalry does? You talk about the cavalry. What is the cavalry in a horseless army?

General WHALEN. Still charged with the same mission, sir, reconnaissance——

Mr. STRATTON. Who is charged with it? What do they do? Do they walk? Do they ride? Do they fly, what?

General WHALEN. All of the above, sir.

The organization of the cavalry squadrons will be such that they do have air troops also where they do have helicopters to perform the reconnaissance role, where they can do so——

Mr. STRATTON. Do they have tanks?

General WHALEN. The division cavalry squadron will not. The regimental cavalry squadrons will.

Mr. STRATTON. Well, the regiment is a place where the fighting is going on. It doesn't go on back in the division CP. So it is tanks and helicopters and everything else?

General WHALEN. Yes sir.

Mr. STRATTON. So what is the point of this particular vehicle?

General WHALEN. It is the scout element, the ground scout element of the cavalry force, whether that is a division force or a regimental. The two scouts in the back join the driver, commander, and gunner in providing a 24-hour-a-day capability.

Mr. BENNETT. Could I ask a question?

Mr. STRATTON. Yes.

Mr. BENNETT. I want to follow up on what you are saying. Why can't the tanks that we have economically do this?

General WHALEN. Sir, the mobility that this vehicle provides compared to our existing tanks is greatly different. We have got a 25-ton vehicle as compared to the 50-plus tons of our present day tank family and it more adequately performs a recon and scout role than the tank can.

Mr. BENNETT. You are saying our tanks have gotten so big, the ones we use for basic combat, that they no longer can really perform very much of a reconnaissance function?

General WHALEN. They are suited, sir, as main battle tanks. They are not designed to be recon and scout vehicles.

General MALONEY. We have always used lighter vehicles for the reconnaissance element, sir. I cannot recall ever using the main battle tank as a member of the cavalry for reconnaissance.

Mr. BENNETT. Where are the tanks? Are they under the cavalry or not? I thought we just had testimony that the tanks were under the cavalry.

General MALONEY. Yes sir, sometimes we have tanks as part of the cavalry.

Mr. BENNETT. Where are they the rest of the time?

General MALONEY. They are in the armored battalions that are in the armored division. They are engaged in the main battle.

Mr. BENNETT. Which are not considered to be part of the cavalry?

General MALONEY. That is right, sir.

Mr. STRATTON. I think Mr. Bennett has fought out there in the Philippines. In fact he was part of a recon operation, as I recall. This looks to me as though it is sort of gilding the lily. You are going to build a million dollar tank to carry around five people and presumably follow helicopters or tanks. I don't understand this. It looks as though we are getting a little bit soft if we are going to have to ride around everywhere in some armored vehicle and only pop out when we think we have an adequate opportunity to overwhelm the enemy.

Mrs. HOLT. I want to ask why the Army prefers the IFV over the AIFV. I know we have heard answers to that many times. For the record, would you repeat it?

General MALONEY. The AIFV is a vehicle which is currently being purchased by the Dutch Army from the FMC Corp. It is a 113 armored personnel carrier with a significant upgrade. It has a 25-millimeter cannon. It has an image intensification night sight. It has some applique steel armor which gives it better armored protection than the basic vehicle. It has a one-man turret. One man operates the turret, that is.

It has an upgraded power train, a little better engine and transition than the basic vehicle. So it has greater speed and improved mobility when compared with the basic 113.

It is significantly more capable than is the basic 113 and is a significant step toward a fighting vehicle.

However, it falls terribly short of achieving the capabilities of the Bradley fighting vehicle systems. The areas where it falls short—it is not fast, it does not have stability when it is moving cross country because of the nature of its suspension, the road wheels don't travel up and down as much, therefore, you get a significantly rougher ride.

It does not have a stabilized turret. Therefore, when you are in assault—the reason for a stabilized turret is to keep—if you put the cannon on a target in the fighting vehicle system, and you have got your stabilization enacted, the cannon stays on that target and you can fire even when you are going across rough terrain.

The same way with the tank. This particular vehicle, the AIFV, does not have this feature so the cannon goes up and down with the machine as it moves cross country.

This then, very severely limits your ability to engage and to destroy the counterpart BMP vehicle or other lightly armored vehicles. It does not have the forward looking infrared sight capability that the FVS has. The FLIR sight, which uses infrared, gives you like a TV presentation, but looks for heat, even in daytime. It can see through dust and fog and smoke, the smoke of battle, and allows you to engage the enemy though he may not, unless he has a similar device, be able to engage you.

You don't find that on AIFV. Importantly, the AIFV does not have the TOW missile system on board. Therefore, it cannot engage a tank.

Now, with the FVS, you gain a tank but you have to be stationary when you do that. I want to emphasize it doesn't do that on the move. If you see tanks you can stop and fire on them and destroy them or from an over-watch position, as you watch your own tanks moving forward and you are prepared to back them up, you can attack and destroy enemy tanks.

Mrs. HOLT. What is the difference in the cost?

General MALONEY. We believe the cost of AIFV is significantly less than that of the fighting vehicle system, either the cavalry or infantry FVS. But the capability of the system is significantly less also.

Mrs. HOLT. Do you think it is worth the difference in money?

General MALONEY. Well, the capability, probably what you are getting for the price is in the ball park of what you should get for the price. The question really is, what do you need? We feel that we need to be able to kill tanks with the TOW. We need to be able to have the FLIR for the commander and the gunner to use so the commander can assist the gunner in looking for other targets and command his vehicle or his platoon, which the AIFV does not have.

We have what is called a two man turret. What that means is the commander and the gunner are in the turret operating the equipment in the turret. The commander can look through the FLIR and observe what the gunner is seeing. The commander can look for other targets. The commander can look at his other vehicles and command and control his platoon. In an AIFV you don't have this. So you don't really have anywhere near the capability in the AIFV that you have in the FVS.

Now, we got a call this morning from someone over here, I think on the Senate side, saying "but gosh, you can buy four AIFV's for the price of one FVS." That is not correct. You can get fewer than two for the price of the FVS. But if you upgrade the AIFV to give it the same capability of the FVS, and we believe that is a minimum capability we ought to have, then you have got a vehicle that the price has gone up to somewhere in the range of what we are paying for the FVS.

And if the Army were to say—suppose the Army said, well, we will switch, we will take a lesser capability and we will buy the AIFV. Before we could deliver it to our troops—we are driving the Bradley now—before we could deliver the AIFV, we would have to test it. It has got a new power train and we are not quite sure

whether that is going to meet the endurance specifications and all that stuff that the Army puts their equipment through so very, very thoroughly. And then there would be production lead times.

So we are talking several years before we could possibly deliver an AIFV. So we think it is not a good idea to consider a switch because it denies to our troops the equipment that we think the troops need to have to have the combat capability to prevail over the much more combat heavy enemy system.

Mrs. HOLT. Thank you.

General MALONEY. That is pretty much it in a nutshell.

Do you want to add anything?

General WHALEN. No sir, I believe you have covered it.

Mr. STRATTON. I would like to have you provide me with some kind of statement on the rationale for these two vehicles and how you propose to fight them, because this really seems to me unnecessary. I can see getting the infantry out to the battlefield to support the tank, but I can't see this idea of having a $1 million vehicle to drive four or five people around after the tank itself. Sooner or later somebody has to get out there and do the infantry job.

General WHALEN. We will provide that to you.

[The following information was received for the record:]

RATIONALE FOR BRADLEY FIGHTING VEHICLE SYSTEMS

The Army has an emphatic need for a Fighting Vehicle System. This need is based on the threat that we face and how we plan to fight both on the offense and in the defense.

The Soviets have a mechanized, combined arms force that will attempt to surprise us with massive forces stronger than in any previous conflict to gain the momentum in continuous combat in order to achieve their objectives. Their concept of combined arms is organized around tank and motorized rifle units, supported by sophisticated and very mobile Anti-Tank Guided Missile (ATGM) systems. These forces will be brought into battle in echelons which may outnumber our forces 6 to 1. The threat weapons that will be faced will be the 3,000 meter ATGM found on their infantry carrier (BMP), the 1,500 to 2,000 meter tank cannon, saturation artillery and armed helicopters. It is imperative that the force advantage be reduced to 3 to 1 or less before close in battle is fought. The IFV can provide the increase in antiarmor capability required to counter the threat's numerical advantage without causing an increase in either the force structure or manning requirements.

In modern defense, mechanized infantry and tank units operate closely together in many different terrain situations. At longer ranges (3,000 meters) the IFV, with its TOW, engages enemy tanks and BMP's. As the enemy closes in to 2,000 meters, the 25mm cannon on the IFV is used to engage the BMP (beyond the effective range of its 73mm gun) and dismounted infantry with tremendous lethality. In addition, the IFVs' TOW join friendly tank fires to defeat the principal threat—the enemy tanks. Modern defense requires frequent movement to different battle positions by both the tanks and mechanized infantry, and the IFV with its superior mobility, primary and secondary armament, and firing port weapons provides the infantry squad a high degree of protection as the squad moves from one position to another. The successful defense will culminate in a counterattack opportunity where mobility and the 25mm, coaxial machinegun and firing port weapons of the IFV will be required to support the tank in decisive defeat of the weakened threat force.

In the offense, primary roles of the mechanized infantry are to attack mounted with the tank, destroy or suppress ATGM's, kill enemy infantry, overwatch the tanks, and breach obstacles. The infantry needs to be able to fire on the move with both the 25mm primary gun and coaxial machinegun, providing protection to the tanks from close-in and long range antitank weapons by these suppressive fires. As the enemy is engaged, the infantry squad, when required, will dismount and move quickly with machineguns, Dragons and Vipers using covered and concealed routes to engage the enemy at close quarters. With the IFV, the infantry soldier has the assurance that the vehicle which moves him about the battlefield reduces his chances of being killed because it protects him against enemy small arms fire, takes

him farther in a mounted configuration, effectively supports his dismounted movement, and rapidly picks him up to continue against a withdrawing enemy.

The cavalry forces on the modern battlefield will continue to perform reconnaissance, security and limited combat missions. They will fight to gain time and information about the enemy. Because of the independent nature of cavalry missions, their units must be balanced and flexible. They must be able to instantly change from stealthful reconnaissance to an intense fight using antiarmor and antipersonnel weapons to break contact with the enemy when detected. The threat, including tanks, will be forced to move cautiously by the awareness that CFV's antiarmor system may be waiting around every bend or behind every hill. In order to provide useful information and protection to the main force, the CFV must also have equal or greater mobility. The CFV has the blend of mobility, firepower, and protection necessary to meet this diversity of requirements.

During many studies and analyses, we have attempted to identify a less costly alternative to the Bradley Fighting Vehicles. In all of these, we encounter requirements for significantly increased personnel and more vehicles, deficiencies in command and control of the vehicle, lower reliability and maintainability, and less potential for system growth to match changes in the threat forces. No other system offers the variety of capabilities of the Bradley for the cost or so few personnel.

The Bradley IFV and CFV have been designed to meet modern needs; with them we have a difficult mission to defeat the threat, but without them we are unlikely to win the land battle.

General WHALEN. If I may, I wonder if I could take a few more seconds of your time and cite just one example that I think justifies the role of this as opposed to a battlefield taxi, and it is this example:

That sooner or later, you have got to either attack or counterattack and you do have a role where your tanks do move out with the mobility. With the mobility that the M1 provides us, that will happen and happen quickly.

IFV's can be used in the over-watch position when that attack starts. They can provide long-range fire against enemy armor with their TOW's and suppressive fire, with their 25-millimeter cannon from the over-watch, but with the speed that we hope we will have in the M1 tank, the fighting vehicles are going to have to move to stay up.

In the case of M113, as General Maloney has cited, when that occurs, the present day infantry squad gets inside and really contributes nothing to the battle. One of the things that our tank infantry team has got to worry about is a ground mounted enemy antitank system, the Sagger, and its counterparts in the ground mounted role.

Whereas, with the M113's, our infantry contributes nothing to their defeat and each of these can engage the M1, when we have the infantry fighting vehicle with the stabilized 25-millimeter cannon, it is just as effective when moving as it is in its grounded position, in its stopped position. That stabilization provides an opportunity to provide devastatingly accurate fire out beyond 1,000 kilometers. It can undertake suppressive fire on the enemy antitank positions better than any other system you can conceive of. That is the kind of scenario where we see a payoff for this kind of fighting vehicle.

Mr. BENNETT. Could I ask a question? How do you do this now?

General WHALEN. Basically, sir, we don't have the capability to do that other than with artillery. We can provide suppression with artillery, but the infantry cannot provide that suppressive role now.

Mrs. HOLT. Don't all countries have infantry fighting vehicles with tank killing capabilities, all of them that are serious?

General MALONEY. Yes. We are the last people to come aboard.

Mrs. HOLT. I see. I am a little puzzled there.

Mr. STRATTON. With tank killing capability?

Mrs. HOLT. Yes. The Warsaw Pact countries, West Germany——

Mr. STRATTON. We can't even kill the Soviet tanks with our new M1, we are told. How can we get that kind of capability on a fighting vehicle?

General WHALEN. Sir, the TOW missile subsystem does provide that capability, a tank killing capability.

Mr. STRATTON. Then we don't need the 120-millimeter gun. Let's put the TOW's on the M1 and leave off the gun. I mean, this disturbs me. I think you have over-gilded this thing. I didn't realize we were going to have separate vehicles for practically everything. We have got another vehicle coming up here for, what is it, the AA arrangement, then we have got the LAV that we had problems with before. The guy who doesn't have a vehicle in the Army infantry is going to have a psychological problem, I would think, and I mean this might appear to be a joke, but when you are paying as much for this vehicle as you are paying for a tank, and on top of that, you have got a $1.6 million overrun, I don't know, I am trying to fight to keep this budget intact, but I don't see how we can justify something like this out on the floor.

What did we use in Vietnam to fill this particular mission?

General WHALEN. Sir, it was not a mission that particularly needed filling in that this is designed to fight a mechanized battlefield and, of course, we didn't have that.

Mr. STRATTON. And we might end up not fighting on a mechanized battlefield. Then what do we do, put all this stuff in storage and sell it for scrap or something or another?

General MALONEY. We would certainly have to tailor our force to that battle, but we are preparing for the possibility eventually of a war with a very heavily armored force—and, sir, if I might go back to your comment about the M1. With all due respect, I disagree with you concerning the M1 not being able to kill the Soviet tank. It can.

Mr. STRATTON. Well, go ahead, General.

Mr. BENNETT. I would say in the paper that you prepared for Mr. Stratton, I think you ought to address whatever the military need for this is and how you attempted to address it in the past, and why you feel this is something that will fill a gap that you have that you haven't actually filled. It is so expensive.

The chairman is so anxious to get a strong national defense, and if you spend a lot of money for something that is not really needed, then you are going to maybe hurt the chance of getting something that is really needed. I think he is trying to probe to find out whether in fact it is really needed, and part of that is what you did before and how you are going to do it better this way.

General WHALEN. We will provide that, and I believe we can provide it and provide it strongly. It is my lack of ability to articulate it.

Mr. BENNETT. It is a new concept and expensive, and we question it. I am open minded about it, but I think you maybe could make it stronger.

General MALONEY. If I might for about 2 more minutes, may I try a different way of approaching the argument?

Picture the Soviet battlefield with a team comprising their main battle tank, let's say the T-72 accompanied by the BMP which carries their troops, carries a 73-millimeter gun also and backed up by a ZSU-234 antiaircraft system to keep our aircraft off their backs. That sort of triad is in the center of their infantry force.

Now, they have close to 50,000 tanks. They have something like 60,000 armored vehicles of the BMP type. These armored vehicles carry troops and carry some armament that is deadly to some of our vehicles, not our tank.

The guided missile, the Sagger, yes. The cannon, no.

But when this force appears, and it is so huge that it will certainly be a main part of their force. Picture their force coming into contact with our force.

Today we have the M60A3, and we are introducing the M1 accompanied by the M113 armored personnel carrier. Then, behind it the Vulcan air defense 20-millimeter cannon.

The Vulcan is easily overmatched in this kind of battle. It doesn't even have overhead armor protection and can't reach out very far, so we have a problem there to be addressed in a different hearing, but let me talk about our armored personnel carrier.

Our APC cannot keep up with our main battle tank to deliver the infantry. If he could, if the battle were moving that slowly and the infantry were delivered, then the utility of our tank as a mobile hard-hitting weapon is somewhat reduced.

But let's say our forces come together. They can concentrate the firepower of their tanks and of their fighting vehicles against our tank. They could ignore the M113 armored personnel carrier.

If we have the fighting vehicle system that it is a system that cannot be ignored because it can destroy not only their BMP, it is more than a match for their BMP. It can also, as I mentioned, from an overwatch position destroy a tank.

So that complicates the Soviet problem very greatly. That requires them to not just watch for and try to defend against our main battle tank but it means they had better watch out for our fighting vehicle system as well.

So it contributes in that way.

Now, we have at this time zero of these fighting vehicle systems in our force in Europe. We are just beginning to get them in the inventory. We have about 11,000 M60A3 and lesser tanks.

What we are trying to do is build a team that can meet the Soviet head on on the battlefield and prevail.

Now, we would prefer to send our armor in soft spots, but inevitably there will be head-on clashes and when that occurs we must have the firepower in our team to more than match the firepower in their team.

That is the way I have internalized the argument for a fighting vehicle system and I believe that reasonably explains why we feel we need it.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. Would this be a good time to ask you about the cost growth; why have we seen such tremendous cost?

General MALONEY. We are prepared to address that.

General WHALEN. If I can, Mrs. Holt, I would like to respond to your question concerning this increased program cost since our last report to you.

Mr. STRATTON. Better speak up in the mike, General.

General WHALEN. I would like to respond to it in two ways. I would like to start by referring to the information that is shown on one of our charts that had been delivered to you earlier that shows there has been a 5.1-percent cost increase expressed in constant year fiscal year 1983 dollars and I will focus my remarks on the vehicle line as opposed to ammunition because it is in the vehicle line where this growth has occurred.

I would like to go through, in order, funds that were added to the program for inflation, two areas of apparent increase that are not, and then into three areas of increase in the schedule, automated test equipment and estimating error.

The first and by far the largest contributor to this increase is almost $800 million for out-year programs, added just prior to the submission of the President's budget to the Congress.

This resulted from an initiative by the Office of the Secretary of Defense to have more realistic inflation indices for major weapon systems.

In the case of the Bradley, however, the need for these funds is under review.

This is so because past inflation assumptions in this program already include what I consider to be adequate inflation for hardware costs.

Therefore, only in the support areas will additional inflation funds be required.

I anticipate that approximately $700 million of the $787 million added will not be required to deliver the baseline vehicle.

The next two areas involve $256 million that appear to be cost growth because of the ground rules that are used in the selected acquisition report, but in actuality are not.

The first is an application of product improvement.

Since our report to you last year the Army, balancing its priorities and its funding, determined it was necessary to delay ramping the Bradley production to 90 vehicles per month by 1 year.

A fallout of this decision is that product improvements already planned for incorporation into all vehicles can now be placed on more vehicles on the production line rather than on fielded vehicle as a retrofit.

Mr. STRATTON. How does somebody put that kind of improvement in there without getting approval for the additional cost?

General WHALEN. Sir, the funding for these improvements show up—they were approved within the Defense Department——

Mr. STRATTON. Did you come back and tell us it was going to cost more? This is the very thing that we are trying to get a handle on so that some eager beaver project manager doesn't say: "Oh, yes, we want to put this in the vehicle, too, we need a little television or a flush toilet or something or other, and that will make the thing even more attractive."

This is the thing that increases the cost of all these programs.

General WHALEN. Sir, I can assure you that under the management controls that we now have implemented in the Army no project manager, however eager, can put through a product improvement.

Mr. STRATTON. You mean until this year there has never been that limitation?

General WHALEN. No, sir, there has been. This is my second time around as a project manager. I spent 3 years doing it before, and I could not have done it had I wanted to.

Mr. STRATTON. This is the old argument you are reading $500 million due to improved changes and blah, blah, blah.

I mean pretty soon that adds up to big money, and the whole point is to try to keep it down. This was going to cost $175,000 and now it is up $1 to $1½ million.

It is just frustrating.

Mr. Carlucci comes in with all of these 32 conditions that are going to be followed and then you walk in with this program and say we have to make some schedule changes, we had product improvement.

I don't see how you can undertake an additional cost beyond the one that was approved by the committee when we authorized the procurement at a particular figure.

I have been trying to testify for the defense budget before the Budget Committee, and the first thing they throw at us is cost overruns.

General WHALEN. If I could respond on the improvements.

Again, I can assure you——

Mr. STRATTON. I am not going to argue the improvements. I don't know anything about these vehicles, but the idea that you can just add on another $500 million or whatever it is, by some product improvement, just does not make sense at all. We have absolutely no control over anything. We approve it for a particular price and then somebody comes in and puts in an improvement and we are supposed to pick up the slack.

General WHALEN. Sir, no——

Mr. STRATTON. I think we have to take this $1.6 billion out of the hide of these vehicles myself.

General WHALEN. I would go back to the start where I say my fondest hope is to deliver $700 million of that back without any loss of vehicles. I believe that is in excess to my needs.

Mr. STRATTON. Well, I know, but I think we ought to get it all back.

Mr. BENNETT. That is great if he is going to do that. Why do you feel that? Somebody else said you are going to spend $700 million and you say you won't.

General WHALEN. I believe with the assessment of what we have got we don't need that $700 million.

Mr. BENNETT. That is the first time I have heard anything like that. That is very interesting. I hope we have other errors of that type.

Mr. WHITE. How much of the surplus is in the 1983 budget before the Congress?

General WHALEN. We have $20.8 million of that in the fiscal year 1983.

Mr. WHITE. You don't believe you need?

General WHALEN. And the inflation rate was decreased after I put the 1983 budget together, the first time, I suspect I could use it, however, if it were removed or if it were used for another purpose, the chances of successfully executing within the reduced are very high.

Mr. CAMPBELL. Does that mean 20.8 million is available or not?

General WHALEN. We are all guessing until we sign a contract, but I would say my chance of signing a contract are very good.

Mr. STRATTON. This on the Nunn amendment now?

Mr. CAMPBELL. No, sir, it is not a breecher of the Nunn amendment.

Mr. STRATTON. You haven't gone over 15 percent?

Mr. CAMPBELL. No, sir.

General MALONEY. In candor, we were close.

Mr. STRATTON. What do you mean by $566 million was due to a change in estimating methods?

General WHALEN. Sir, we updated our estimation two ways. There were two changes that occurred when we rebaselined the program in the fall.

The first involved a change in our assumption on the actual methodology that we used.

We had assumed ever since the production of DSARC that it would be possible to introduce vehicle assembly competition by fiscal year 1984, that we would have a second source vehicle producer.

We assumed that after this took place we would benefit from that competition and we allowed for that benefit in our cost estimation.

With the uncertain state of second source, no decision has been made on that, it appeared proper to me last fall the more conservative approach and to increase the dollars required in the outyears assuming a continued sole source procurement.

I raised my estimate for the outyears by a total of about $366 million.

The second and last of the estimating changes was updated and expanding our data base for cost protection. Our methodology had relied only on data from the initial production contract, the first year.

While all the delivered hardware is still from that first contract, by this past fall we had a pretty good number for the second year, and a reasonably close estimate of what we were going to need to get the third year contract signed; therefore, we looked at and retooled our estimate based on a 3-year rather than a 1-year base, and the effect of doing that was to estimate or to increase program costs by $132 million.

Mr. STRATTON. Who approves these changes?

General WHALEN. Sir, they are submitted by me through my headquarters in Alexandria to DARCOM and the decision on whether or not they are to be approved rests with the Army staff.

Mr. STRATTON. I think we ought to get a look at the paperwork here. We have had a panel working on this whole subject. I just

don't understand it, how you can say well, we thought we were going to get a second source, but we didn't, so we are going to add another $566 million and we thought it would be nice to have some additional support equipment, so we are going to add $199 million.

This is what Mr. McCurdy was telling us that the SARS don't explain anything. I would like to know when this decision was made and who signed off on it and then show the actual documentation for this kind of thing.

I don't see how we are ever going to get any handle on holding down cost growth unless somebody has to come back to the Congress and say well, we goofed, and it is going to cost $566 million more.

Do you approve that? I am sure they are going to find we are not going to approve it up here.

Mrs. HOLT. Mr. Chairman, I think one point that looks pretty good for the Army is the fact that the SAR that was released showed that there was $129 million major weapon system cost increases and of that only $3 billion was the Army's.

I think that is a fair record if you compare it to the other services.

Mr. STRATTON. And half of that came out of this one program.

Mrs. HOLT. Still I think they are doing a pretty good job of trying to hold down the costs. If they are going to be able to avoid using this contingency fund I think that certainly is commendable.

Mr. STRATTON. Let's go on to the others here because time is running out.

Mr. WHITE. Relate to that $366 million that you put in because you now assume that you won't have competition. As I understand it, when you did that methodology before you decreased the total funding requirement taking credit for that, but you didn't put in the cost of it, the cost of tooling and facilitizing the second source; is that correct?

That wasn't assumed in your prior numbers, the $600 million that it would cost to put one of them in business?

General WHALEN. Mr. White, it is correct that there was no cost put in there for tooling or facilitization. I can't agree or disagree at this time whether that cost would have turned out to be $600 million. We are looking at that in our analysis of second source.

But you are correct, there was no allowance for that because the assumption was that by fiscal year 1984 there would be someone willing to bid without facilitization.

Mr. WHITE. Which you now find to be a rather unreasonable assumption?

General WHALEN. I am not quite certain. There are people who say they will do it. I don't know whether to believe them. But I do have people that say they will do it.

I find that a little difficult to swallow.

Mr. WHITE. Thank you.

Mr. STRATTON. OK. Where are we now? Are we on the cavalry vehicle, General?

General WHALEN. Sir, I can continue on with the prepared testimony or skip through to any point that you choose.

Mr. STRATTON. We have the two fighting vehicles. We have an ammunition support vehicle, and we have got a multiple launch rocket system, don't we?

General MALONEY. Yes, sir, we do. Unless you have further questions for General Whalen concerning the TFS systems, we would move to the multiple launch rocket system.

Mr. STRATTON. We haven't handled the cavalary vehicle yet, have we?

General WHALEN. Sir, for budgeting purposes we treat that separately from the infantry. They are combined in the total program.

Mr. STRATTON. What is the cost of the cavalry vehicle?

General WHALEN. Approximately the same as the infantry vehicle, sir. It is within $3,000 on a unit cost basis.

Mr. STRATTON. What is your program objective there?

General WHALEN. Sir, overall, out of 6,882 total infantry and cavalry——

Mr. STRATTON. I am just talking about cavalry.

General WHALEN. For cavalry there are 2,850, about 2,850, sir.

Mr. STRATTON. And how many infantry?

General WHALEN. About 4,000.

Mr. STRATTON. Well, the recon mission is a relatively small one, isn't it? In other words, you are ordering 4,000 for the infantry and virtually 3,000 for the reconnaissance purposes? Isn't that a little overstaffing?

General WHALEN. No; I don't think so because those cavalry vehicles will go to three organizational elements. First, the armored cavalry regiments, which have the capability both to fight and to perform reconnaissance; second, to the division cavalry squadrons which are primarily for reconnaissance; and then, third, down in every tank battalion and every mech infantry battalions in the armored and mech divisions there will be seven cavalry divisions for their local use.

Mr. STRATTON. What is wrong with having one vehicle for both purposes?

General WHALEN. Sir, the intent is that they will be essentially one vehicle. It is only the internal arrangements that are different. That was the intent as late as 1975, the armor had two programs, one the MICV for the infantry, the other the scout program for the cavalry.

The decision was made primarily on a cost basis to save operations and support costs to combine the two into a single vehicle. That was mostly the same and today the infantry and cavalry are mostly the same. It is only the inside that is different.

Mr. STRATTON. You have two different assembly lines, don't you?

General WHALEN. No; they come one right after the other on the assembly line and nobody cares which it is. They put the right part on.

Mr. STRATTON. Why don't we just have the same vehicle?

General WHALEN. It was a very minor modification to be able to optimize the cavalry version for those two Scouts. We could but it was not a cost increase to reoptimize it so they can use——

Mr. STRATTON. It sounds like the same thing with the LAV, we are going to have the same thing only it is going to be different, and we are going to have different modes and so forth.

OK. Let's go to the next one.

Mr. CAMPBELL. I have a question of General Maloney.

Is it not correct that the Larkin report, which was published sometime back in 1976, is a report that justified the creation of the Bradley fighting vehicle system, and is it not correct that that report stated words to the effect that this would be the dedicated tank killer for the Army and we would not have any other dedicated systems such as the improved TOW vehicle or the HMMWV with TOW. Would you like to comment on that, please?

General MALONEY. Mr. Campbell, to comment directly, I would have to research that to provide you an informed answer. I will ask if anyone else here with my group might be able to provide that answer extemporaneously.

General WHALEN. Mr. Campbell, I cannot give you the definitive answer that you are looking at. If I may, I would like to comment on it and then we will provide you the definitive answer.

That study, the Larkin study, was the result of an earlier study that was run in conjunction with NATO. That showed that to win against the presumed threat from the Warsaw Pact we would have to proliferate antitank weapons on the battlefield.

We had to have more of them some way and they looked at the different alternatives of what was the best way to get more tank killers. They looked all the way across from more tanks to more ground-mounted antitank TOW's and looked at the best mix among those.

The conclusion of that study and then as confirmed by the Larkin study was that the most cost effective way to proliferate that antitank capability was to use the MICV, then the infantry fighting vehicle and cavalry equivalent in an additional role and put that antitank capability on it.

They knew, however, it was not going to go into the field instantly so they approved the request to continue the ITV program, to have a short-term capability to get that tank killer out until the Bradley could arrive.

But finally to come back and answer your specific question, it was going to be the antitank killer. I don't know we will have to provide that to you.

[The following information was recorded for the record:]

THE LARKIN STUDY

General MALONEY. The 1976 Larkin Study Report contained the following recommendations:

a. A common chassis, turret and upper hull for Mechanized Infantry Combat Vehicle (MICV) developed for the infantry and scout role.

b. Development of MICV include an integrated TOW missile capability for every combat vehicle.

c. The MICV be developed with a 2-man turret (weapon station).

d. The Firing Port Weapon (FPW) be the integral supplementary armament for MICV.

e. The final MICV configuration have a TOW Bushmaster Armored Turret-2-man (TBAT-II) turret.

f. The stretched M113A1 not be considered as a combat vehicle.

g. The Mechanized Infantry Battalion be equipped with 4 MICV per platoon, 13 per company and 41 per battalion; all with TBAT-II.

The study included Improved TOW Vehicles (ITV's) and did not recommend that they be eliminated; however, it did state that the fighting vehicles (M2 and M3) were more effective than ITV's as antiarmor systems. The Larkin Study did not con-

sider the High Mobility Multipurpose Wheeled Vehicle (HMMWV) as a TOW platform since the HMMWV concept and requirement were not yet conceived in 1976.

Mr. STRATTON. Any other questions?

Let's move on to the next FAASV.

General MALONEY. May I request whether you might need General Whalen anymore today? Because his schedule is such that he would like to scoot for an airplane. But he is certainly available.

Mr. STRATTON. I don't know who is supposed to testify on these things.

General WHALEN. I have completed on the Bradley, unless you have further questions on that infantry or cavalry versions.

Mr. STRATTON. That is fine, if you could supply us with the information that we asked for.

General WHALEN. Yes, sir.

General MALONEY. Turning now to the multiple launch rocket system.

The Army has a need for a rapid response, long-range artillery system capable of attacking deep targets, particulary during periods of heavy combat when cannon artillery is fully engaged in providing direct support to the frontline troops.

The multiple launch rocket system fills this need.

There is a photo of the MLRS.

MULTIPLE LAUNCH ROCKET SYSTEM [MLRS]

Fiscal year 1983 RDT&E request $23.2.
Fiscal year 1983 WPN SYS PROC request $444.4M.
High volume fires at extended ranges; accelerated schedule; fiscal year 1983—3rd year of production; total buy--333 launchers; 362,832 rockets; and 6,210 rockets/112 launchers procured thru fiscal year 1982 FDP.

Mr. BENNETT. Is this a new weapon?

General MALONEY. Yes, sir.

Mr. BENNETT. It would be instructive to me, so I could learn, what we did before. This is a new concept.

General MALONEY. This is a new concept. I think the closest thing to this would be what was called the Stalin Organ of World War II, which was a very high rate of fire unguided rocket system that the Soviets had. The Germans also had a system of this kind which I think they called the Nebelwerfer which was some kind of organ.

Mr. BENNETT. What did we have before; nothing?

General MALONEY. We have experimented from time to time with unguided rockets pulled on a trailer, but we have never had any serious weapons of this kind. So this is a new concept for the U.S. Army.

Mr. BENNETT. It is helpful to me to be able to understand what you are going to do with it and what you did before to do the same thing. That makes me understand it better.

General MALONEY. OK. I would say this, that in World War II we had a great deal of artillery and that artillery was usually gainfully employed but rarely fully saturated.

We now perceive the very great materiel and manpower capability of the Soviet Force. If we come against it, our artillery is going to be not only employed but fully employed, and they will be saturated.

There will be many targets that will present themselves, many Soviet organizations like air defense batteries that will present themselves that need to be attacked quickly and decisively with a heavy volume of fire in very intense periods of time during surge when the Soviets are surging to punch through our line.

This kind of a system will be employed to just wipe out large formations of Soviet capability.

Mr. STRATTON. We used to have these multiple rocket launchers on the LCI's going into landings, Charlie, in New Guinea and Biak, about 50 rockets going out all at once.

General MALONEY. Yes.

Mr. STRATTON. Nobody knew exactly where they were going to hit.

General MALONEY. They went out to whom it may concern. This doesn't do that.

Mr. STRATTON. It scared the hell out of the Japanese. They all took off, sir.

General MALONEY. The MLRS we think is a step up. Those rockets that we are familiar with had a single warhead, a single blast when it hit the ground. In this system we have a large number of small submunitions that are dispensed high above the target and blanket the area with explosives and fragments.

We will show you this in a minute in a videotape.

The submunitions are very devastating against targets such as air defense or artillery or troops in the open and they are effective against the thin top armor of tanks and other armored vehicles.

The system that we are buying has a number of built-in efficiencies. The rockets are sealed in pods for shipment and require no maintenance once they leave the factory.

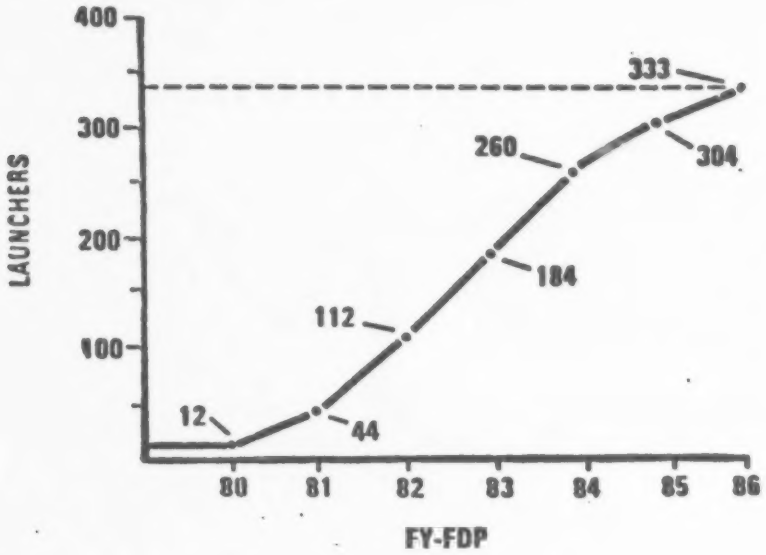
We use the same carrier as shown on this next chart as we use in the infantry fighting vehicle. This is a derivative of that. The same power train, same kind of armor for crew protection.

MLRS FISCAL YEAR 1983 BUDGET REQUEST

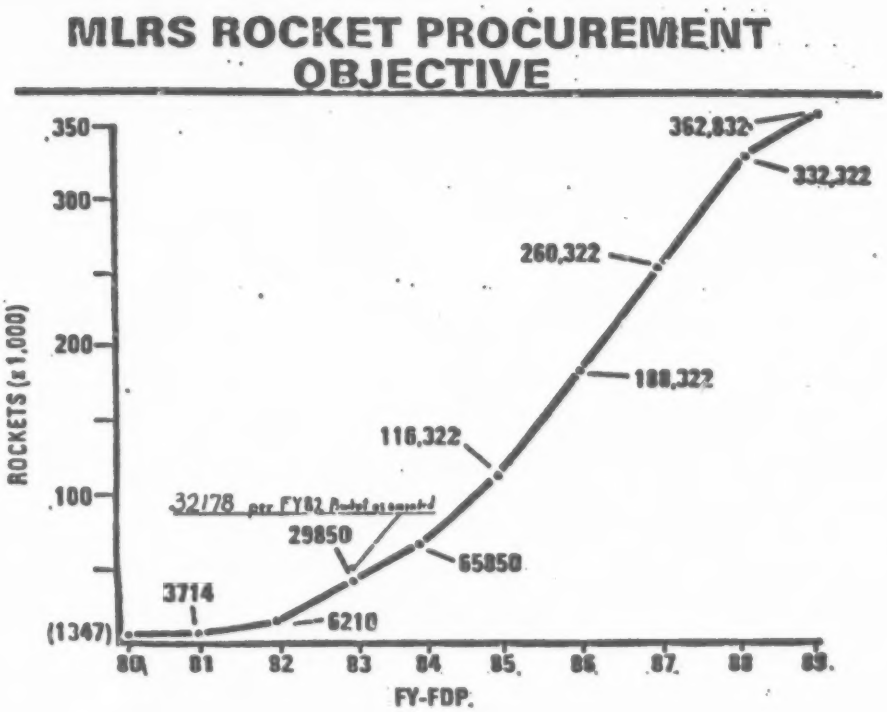
Provides for: Procurement of 23,640 rockets and 72 launchers. Completion of Maturation R. & D.

Our request in the 1983 budget includes $23.2 million to complete the development effort and $444.4 million to buy 72 launchers, 23,640 rockets.

MLRS LAUNCHER PROCUREMENT OBJECTIVE



This chart shows the continuing procurement of launchers. The fiscal year 1983 procurement quantity is the same as we forecast last year.



This next chart shows the cumulative total of rockets procured by fiscal year. Our quantity in 1983 is slightly reduced. We are asking for 23,640 as compared with our last year's estimate of 25,968.

This happened as a result of our multiyear contract acquisition strategy.

The program is being managed within cost, on schedule and within the technical thresholds and we believe has a sound——

Mr. BENNETT. It is covered. Something is wrong with your picture.

General MALONEY. He meant to turn that off. Unless you wanted to look at it.

Mr. BENNETT. No, no.

General MALONEY. We think we have got a sound competitive acquisition strategy in this program. The report to the Congress dated February 5, 1982, prepared by the General Accounting Office, is entitled "The Army's Multiple Launch Rocket System", is progressing well and merits continued support, we are happy to say.

This report also says that some important testing lies ahead. One of those tests was conducted at the White Sands Missile Range, and I would like you to see that.

The Army project manager of the year, Col. Monte Hatchett, will describe this.

STATEMENT OF COL. MONTE J. HATCHETT, PROGRAM MANAGER, MULTIPLE LAUNCH ROCKET SYSTEM (MLRS), U.S. ARMY MISSILE COMMAND

Colonel HATCHETT. Sir, this is a 12-round ripple. The system fires 4 seconds apart, 9-inch diameter rockets out to 35 kilometers. This was fired on February 10, at about 17 kilometers. Each warhead contains 644 bomblets and you will see some of those warheads going off; the camera coverage in the target area was not sufficient to cover all of them, but you will see all 12 rockets being fired at about 4 seconds apart.

That will be the normal mode for the artillery to fire. There are three men in the cab during the firing. This is a very small amount of manpower required for this system.

There was a little delay with the 11th and 12th rounds. For brevity I have only tracked one of the rounds in flight. This is round No. 1.

You must watch closely because the warhead event occurs above the ground and you will see the warhead event where 644 munitions are pushed through the skin.

That was it. That is the rocket mode. This is the first one hitting.

Now, the bulk of that first round hit over here. The camera was not quite aimed at the exact point. In the following you will see about 40 to 60 of the bomblets within the camera range.

Here is the second one.

Realizing there were 644 bomblets, you are only seeing about 60. But you are hearing most of them.

This was the center of the target. This was the aim point for all 12.

Another one.

We had helicopters, tanks, APC's, ammo stacks, fuel dumps, a wide variety of targets in the area.

We have a shape charge in each bomblet that can penetrate 2⅞ inches of armor; and three of them hit on one tank.

Here you will see we lost this camera. That is why we have degradation in film coverage.

You have heard and seen 6 of the rounds. This was after all 12 rounds had gone in. This was the result of the 12th round.

This was the target at White Sands Missile Range.

This is the target array. You see the darkened spot where the grenades hit.

To give you a feel for the size, it is about 300 by 240 meters. We normally cover a larger area than that, probably up to about 500 meters in diameter.

This is some Soviet—these are dummies here, in a prone position. Some of these are Soviet type equipment such as radars and some of their SAM equipment.

This was a fuel dump with all fuel spilled out.

This is Soviet radar.

Shrapnel was in every target we had there. There is a self-propelled artillery piece. We painted most of them white so that we could see the shrapnel damage.

We had helicopters, all the windshields were broken. We had dummies sitting in the helicopters which were full of shrapnel.

Here is a penetration of the vehicle by the shape charge.

Mrs. HOLT. Would our infantry fighting vehicle protect against that?

Colonel HATCHETT. Probably not from the top. These were top attacks. If they came down on top, they would penetrate.

From the side, yes.

All the tires on all the vehicles were deflated so, therefore, if that was a unit you would have to go get new tires before he could move his unit.

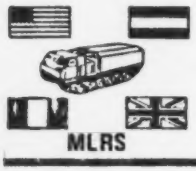
These are dummies. You can see how they were hit while in a prone position.

Mr. STRATTON. What is the caliber of the rocket?

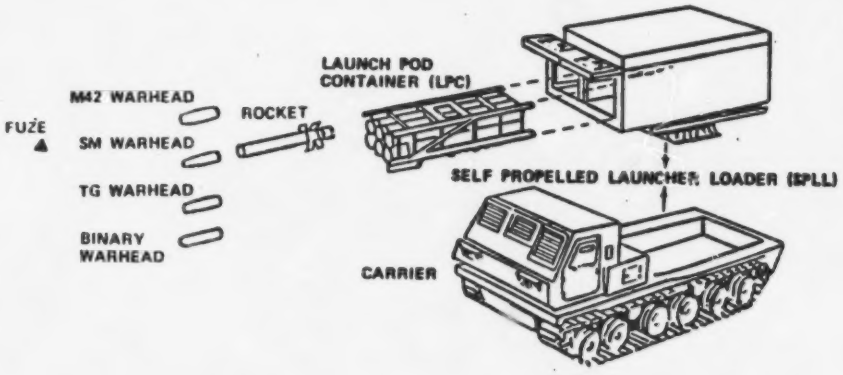
Colonel HATCHETT. Nine inches in diameter, but it carries 644 submunitions, about half a pound each.

The M42 grenade, I will describe that in a moment in my briefing.

Mr. STRATTON. Is this supposed to be a precision weapon or sort of——



SYSTEM HARDWARE



Colonel HATCHETT. It is an area weapon but each rocket has a requirement to meet an accuracy goal of [deleted]. On this particular shot we demonstrated less than [deleted]. So this shot was an extremely good shot for us.

I think we will meet the [deleted]. It does give us overlap. If we fire 12 rockets out there we expect overlap. The reason it is 4 seconds with each firing is the system completely relays to the aiming point because the vehicle does move after each rocket. Therefore, it has got 4 seconds to reaim and get back to the aiming point.

The computer we have, an onboard computer, automatically fires the next rocket once it gets within 3 mils, so therefore we expect 3 mils on the aiming point with each round.

Mr. STRATTON. Do you have a different type of warhead?

Colonel HATCHETT. I am going to discuss that.

Mr. STRATTON. You talked about a shape charge.

Colonel HATCHETT. That is the M42 bomblet. If I could have my first Vu-Graph, there are three other warheads being designed in my project. I mentioned the dual purpose warhead that has the M42 half-a-pound dual purpose submunition that has the shrapnel and shape charge. There is a scatterable mine warhead.

I am doing the testing. It is developed by the Federal Republic of Germany that is investing $45 million to develop this AT-2 mine warhead in which we carry 28 of those mines.

We have already flown 10 of those rockets and next month I will start the next 14.

There is a terminal guidance warhead which will have six of those type submissiles in each warhead of the MLRS and they will have either IR or millimeter wave sensors. They will be more expensive than the low cost dual purpose warheads.

Also this year I initiate binary chemical for the fourth warhead. Common rocket, it is the 9-inch.

The rocket overall length is about 14 feet; 7 feet is warhead, the first time we have had a 50/50 ratio as far as rocket versus warhead.

The rockets come in six round packs, two packs per launcher. The pack is the storage container, the shipper container and firing container.

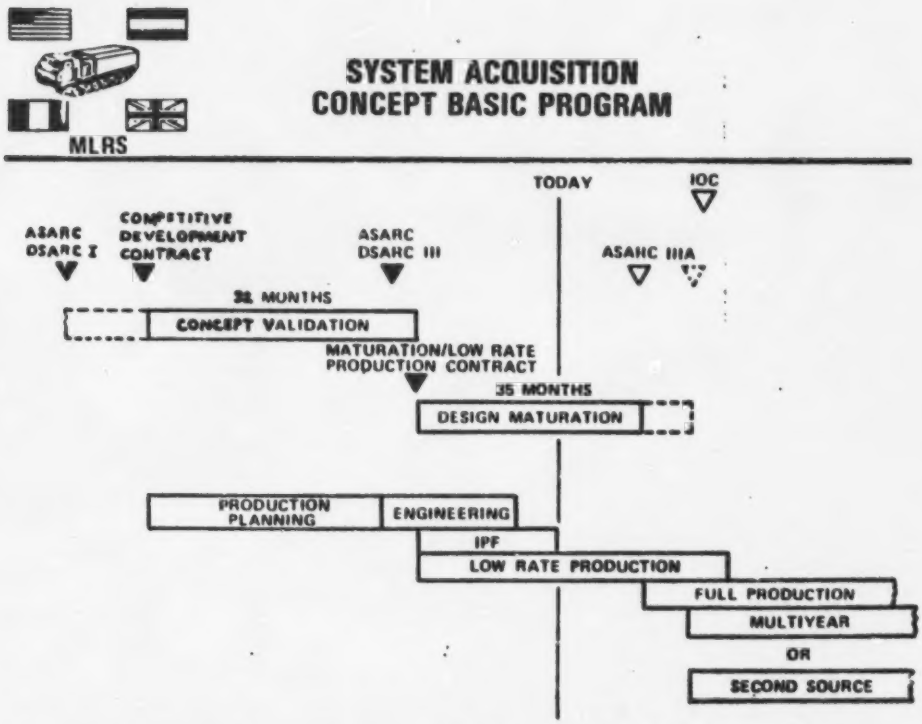
The rounds themselves require no maintenance. Two of those packs for every launcher loader module [LLM] and the three-man carrier which is a derivative of the IFV make up the system called MLRS. A common fuse is used for all of the warheads.

BASELINE PROGRAM

Force structure.—14 batteries, 9 launchers each; 4 battalions, 27 launchers each.
Procurement objectives.—333 SPLLS, 480 RSV/RST; 362,832 tactical rounds, 27,648 training rounds.

Note: 1. Total rocket quantities same as DSARC I. 2. SPLL increased by 57 for POMCUS stocks. 3. Does not include additional POMCUS which may be added in future POMS.

On the force structure, we are going to put one battery in most of our divisions. There are nine of these launchers in each battery. For the mission that you just observed, it would take 3½ 8-inch howitzer batteries to deliver the same firepower at the same target at the same rate. We are going to put one battery of nine launchers each in each division except the light divisions. Then we will have 4 battalions, 1 for each corps, or 2 corps in Europe and 2 in the United States, for a total of 333-fire units; 480 resupply vehicles; this is the Army's new, 10-ton truck; 362,832 tactical rounds; and training rounds for the division. We will have 57 launchers in POMCUS stock in Europe.



Next, please. The system acquisition for MLRS is a unique one supported by the Congress. A decision was made by Congress to approve funding concurrency in this program, which is what has kept this program alive. Basically MLRS started out in a concept validation phase of 32 months. This was a competitive phase, two big contractors, Boeing and Vought in a shootout. It was during this phase that we established the competition for all remaining phases.

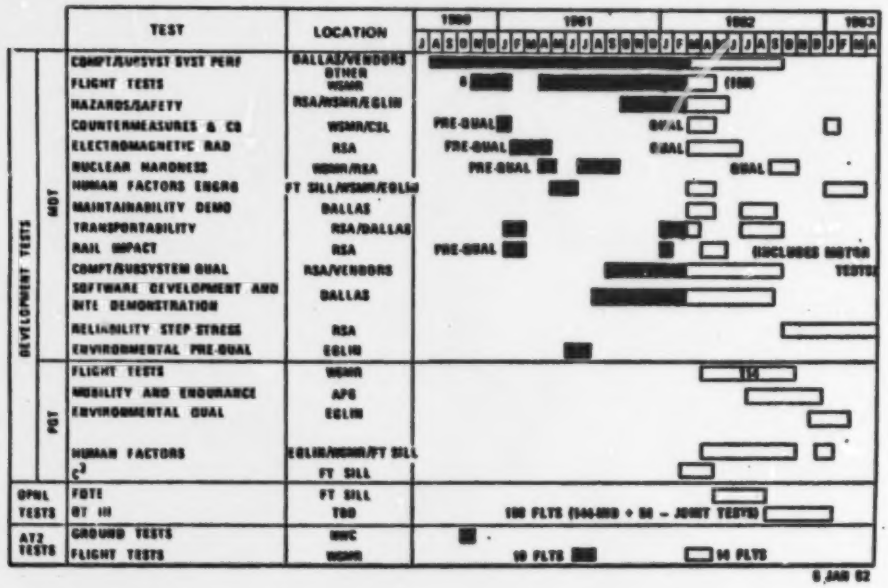
This is the strategy that MLRS used. In fact, we had such good competition that I feel that the Army could have gone with either contractor and had a successful program. They were very close.

At the end of the ASARC during this period, a contract was awarded to the winning contractor for the concurrency of the program, which is the R. & D. maturation development phase, plus the winner had to agree to sign up for initial production facilitization to set up production facilities and to sign up for 4 years of production based on his learning curve, or his design to unit cost that he had also submitted for full production in either a multiyear or a second source environment.

So, the Army, because of this competition, received the R. & D. program and 4 years of production starting in 1980. So, 1980, 1981, 1982, and 1983, have been locked-in years with a fixed price incentive contract for this.

Now we are coming in with the first year in 1983, asking for multiyear procurement. That is the unique part of our request this year, in that we would initiate a multiyear contract.

MLRS MATURATION PHASE TEST PROGRAM SCHEDULE



This is my test program.

Mrs. HOLT. Could I ask at that point what is the difference in cost in the multiyear and the second source production? Is it cost effective to go multiyear?

Colonel HATCHETT. I will get to the decision criteria; it's a decision point that the Army must come to as to whether we are going to go multiyear or to the second source. I have a full chart that explains that, if you could wait, and I will explain the criteria. But the Army will choose, either a multiyear or second source.

Mrs. HOLT. We are talking strictly about the rocket and the launcher now?

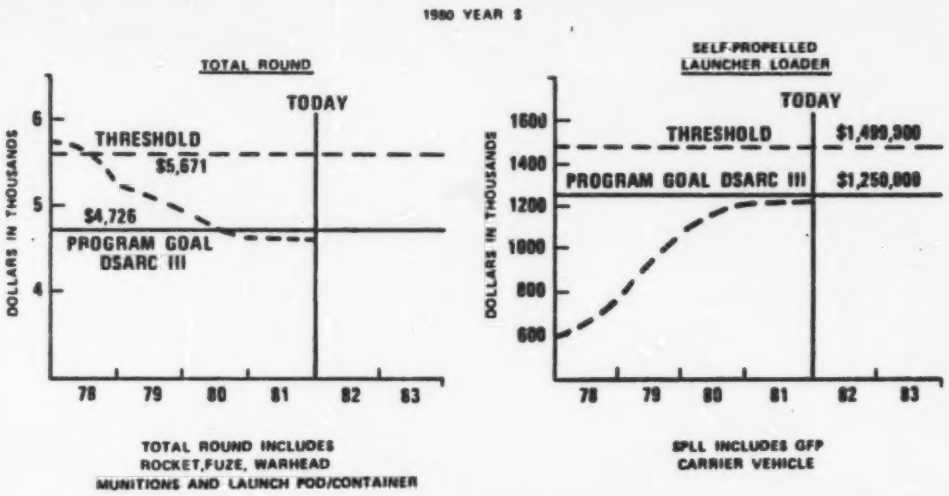
Colonel HATCHETT. That is correct for multiyear procurement. That is the total system. To show you where we are in the test phase, we are on schedule. There is one minor problem that I would mention to you, that in the month of April we would start flight test at White Sands Missile Range on our first production rockets. The switch of the Space Shuttle to landing at White Sands has caused us a 21-day delay there. It's no problem. We have about a 30-day buffer built into that program, but the switching of the landing for the space shuttle has suspended all firings at White Sands for the first 21 days of April.

You can see I am on schedule for all my minitest programs I am testing at Eglin, White Sands Missile Range, at the contractor's plant, Fort Sill, Okla., and at Redstone Arsenal where we are testing the rockets.

I mention the German AT-2. We have 10 flights, 14 coming up. We are not buying the AT-2 mine warhead because we have not established a requirement for it, but I am committed and the program coordinator is. This is an RSI program, a multinational coproduction program, I am required to support the Germans by MOU.

The test program is on schedule, and as of today we have only had very few minor problems.

DESIGN TO PRODUCTION COST



The heart of the MLRS, as far as controlling costs, has been this chart here, the design to unit cost. The design to unit cost goals were established early-on for the rocket and for the fire unit. For the rocket back when we started in 1978, the first year, we had a high cost for the rocket. In fact, the first report we saw, we were above the threshold. But since that time, in the ongoing years, we have driven the cost of our rocket down to where right now it's below the goal.

However, on the carrier, primarily in cost estimating plus the cost of the IFV vehicle and also the cost of our launcher, we have seen an increase so that I am approaching the program goal here that was established at the last DSARC.

However, I predict that we will meet the goal for the launcher, although only 17 percent of the procurement dollars are associated with this launcher.

Eighty-three percent of the dollars of our total program are associated with the rocket, so at least as far as costs are concerned, we are working on the high dollar volume, even though it's a low-cost rocket.

Mrs. HOLT. Has the manufacturer overcome the problems that they have had; will they be able to produce at the rate they should for the launcher?

Colonel HATCHETT. Launcher, yes, ma'am. The launcher is at 72 per year or six per month. He should have no problem in producing six per month. We do not forecast any problem in building the carriers at six a month.

Mr. CAMPBELL. What about the strike they had last year?

Colonel HATCHETT. I should mention the strike. There was a 4-month strike at FMC. This delayed the total program by 4 months. They have picked back up and General Whalen delivered the first carrier to me last week, so they are on schedule. We had a cost growth for that 4 months, and it amounted to $7.5 million in R. & D. and about $5 million to $6 million in MIPA in the procurement.

However, fortunately, we had that much in contingent liability for changes. I did not have that many changes; therefore, the requests for additional procurement dollars did not come any further than my office.

Mrs. HOLT. That was directly due to the delay caused by the strike?

Colonel HATCHETT. Yes, ma'am, the FMC people went on strike and delayed the delivery of that carrier. The carrier is Government furnished equipment to Vought, my prime.

Mr. CAMPBELL. The increase then would be almost entirely due to inflation, I would say, is that correct? So, when you say that additional amount of money was required for the system, is that because of the inflation in the outyears?

Colonel HATCHETT. I am going to show you my SAR chart in a moment, but I have not asked for additional dollars.

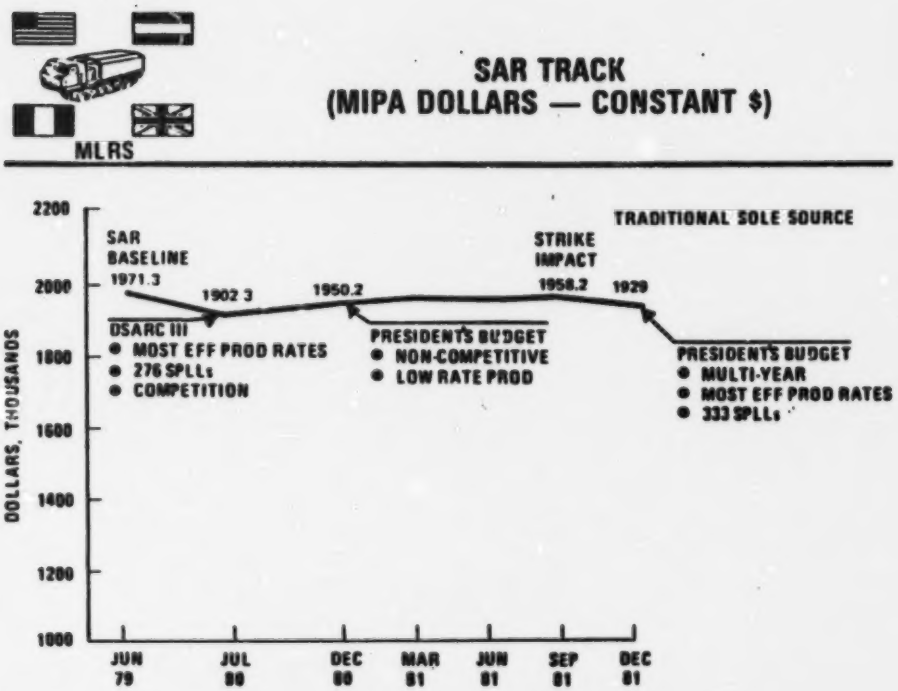
It is normal inflation.

Mr. CAMPBELL. You said the strike resulted in an increase in overall program costs.

Colonel HATCHETT. No; it was an increase in cost but not to the program in that I had change dollars that I did not spend because I didn't require the changes. So, therefore, I was able to convert that change money to dollars for the strike. Therefore, I did not have to ask higher headquarters for any more dollars to cover the strike.

Mr. CAMPBELL. But the dollars required would be just because of inflation; is that correct?

Colonel HATCHETT. That is right. Remember, it only affected the 1980 and 1981 procurement dollars. Those were already under contract, because by the 1982 and 1983 procurement years FMC will be back on delivery.



This is the SAR track in constant dollars since the first one was submitted in June 1979 at $1.97 billion, and today in my December SAR was $1.92 billion or almost a straight line. You do see the increase here of $8 million due to the strike, from this point here to here, but that was for the strike impact. Since then I have been able to drive the cost down some more on the SAR. So, you are looking at primarily a straight line as far as the SAR is concerned.

Mr. STRATTON. Colonel, what does unit cost represent in this kind of an arrangement? You have rockets, you have launchers, and you have a carrier vehicle.

Colonel HATCHETT. The first 4 years of production I have under contract, so I can specifically say what the unit costs are. In the fiscal year 1983, since it's already under an option in a contract, the carriers will cost approximately $600,000, and the LLM, the launcher itself, will cost $800,000, or the total vehicle, the total launcher is $1.4 million in 1983. That has been done for 2 years.

Mr. STRATTON. The carrier cost $600,000 and the launcher costs what?

Colonel HATCHETT. The launcher costs $800,000.

When you look at my design to unit cost I predicted when we buy 33 of them, with the inflation added for the outyears, we should wind up paying an average unit cost of $1.25 million.

Mr. STRATTON. You have forgotten the rockets now; what about them?

Colonel HATCHETT. The first rocket buy of 1980, which was only about 1,500, cost about $10,000 apiece. This year they are a little under $6,000.

Let me go back to the one design to unit cost to give the chairman a feel for the total program on what the unit cost will be.

This was the program goal at what we are projecting today under design to unit costs. If we buy 333 launchers we can expect to pay $1.25 million, with the last one being produced in 1986. This has the inflation in it.

If we buy 362,832 rockets through fiscal year 1989, the average cost is about $4,680 per rocket, and that has the inflation also added to it.

As I mentioned, our cost was about $10,000 for the 1,500 in 1980; this year the cost is a little under $6,000 a copy. That is for the total rocket, to include the 644 submunitions, which cost about $2.80 apiece, which is probably the best buy the U.S. Army makes. They are produced at Lone Star Army Ammunition Plant at Texarkana, Tex. It also includes a Government furnished fuse, and one-sixth the cost of the pod.

The launch pod container is in this cost right here.

Mr. STRATTON. Is there a specific number of rockets that ought to be provided with each launcher?

Colonel HATCHETT. The total number of rockets is to support the total force structure. We have a basic load plus a war reserve. The basic load is 108 rockets for every launcher. But then you have a war reserve because the basic load is expected to be fired up in a short period of time, and then the war reserve, like the rest of the rounds of ammunition we have stored in Europe, would be part of this.

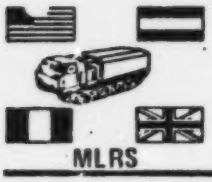
Mr. STRATTON. Every launcher has a carrier, is that right?

Colonel HATCHETT. Well, it's part, it's one vehicle. It's mounted on the carrier.

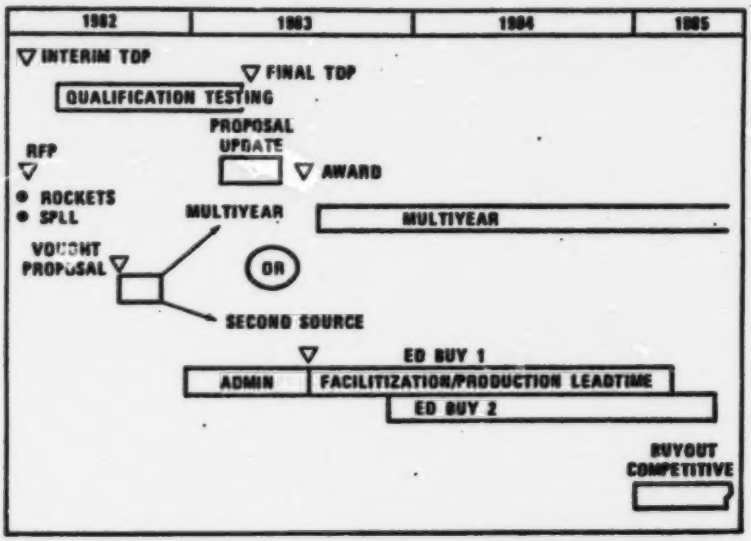
Mr. STRATTON. All right. Are these used individually or do you have batteries of them or what?

Colonel HATCHETT. There is a battery of nine launchers. However, the O. & O. concept, the operational concept that the field artillery intends to use, is to fire one launcher 12-round ripple which you saw on the monitor because that is almost 8,000 submunitions and that will destroy almost any target unless it's a real huge target, and you would probably then want to fire two launcher loads from two launchers. Each launcher has its own communications systems with the battery computer set and, therefore, can receive individual fire missions and fire from its own location.

The fire unit knows where its coordinates are, its location, at all times. The on-board computer computes that.



ACQUISITION STRATEGY



Now to the acquisition strategy that Army has had for this. Here in 1982 we have an interim tech data package which I have now, and we are qualifying it through tests through DT/OT-III. Next month we intend to release a request for a proposal to Vought, the prime contractor, for a multiyear contract for the rockets and fire units, the launchers.

This proposal will come in from Vought, and we will evaluate it against that design to unit cost which you saw earlier for the rocket and the fire unit. Also we have in a letter or we have in discussion with Vought said that if we received the advanced procurement dollars which are in this year's request, that we should save 6 to 10 percent on the economic buys, so we are looking at some percentage below the DTUPC on the cost of the rockets and fire units.

If that cost is favorable in that evaluation, then we would award a multiyear contract to Vought for the remaining rockets and fire units. If, however, they have anticipated a cost growth or propose a cost growth, we would then say, well, that is unacceptable, and because the dollars that are in there are for advanced procurement, we'd ask the Congress for a reprograming action to establish a second source.

The second source would be competitive. There are probably between three and six contractors in industry that are willing to take on the second source for MLRS.

We would have two educational buys because we would be required to qualify that new second source that we got through competition and we would give him 1983 and 1984, 2 years to facilitize

and come up on the learning curve, so in 1985 he would be competitive with Vought; therefore, we want to make sure he qualifies his rocket and is fully competitive, and that we are in a competitive position because we intend to buy out the remaining rockets at that time.

The program that I have shown here, and the program we have requested from the Congress, shows $193 million savings to the total program for the multiyear. Of course, if it's not advantageous to the Government to go on multiyear and we have to go second source, the saving is about $90 million, because we do have to facilitize and qualify the second source contractor to a tune of about $30 million for his facilities, and about $60 to $70 million to qualify his rocket over those two educational buys.

Mr. STRATTON. How many launchers do you have now in the inventory?

Colonel HATCHETT. We have under contract 184 launchers, sir. We bought 12 in——

Mr. STRATTON. How many launchers do you have operational?

Colonel HATCHETT. The first training battery was only activated last month. The first battery to deploy activates on the 9th day of April. It will be deployed to Fort Riley, Kans., early next year.

Mr. STRATTON. You are not, on the basis of that acquisition strategy, you are not proposing to buy any launchers this year; is that right?

Colonel HATCHETT. Yes, sir; we are asking for 72.

Mr. STRATTON. Well, we don't seem to have that in the program submission.

Mr. CAMPBELL. Where do you have that reflected in your P-1 document? You indicated the unit cost of the rocket was about $15,000. If you look in the P-1 document that is the only unit cost you see. You don't see the cost for a launcher. Where is that located?

Colonel HATCHETT. That is the fallacy there. The 72 launchers are part of that request.

General MALONEY. It's in the P-1, but I don't know how to identify it.

Mr. CAMPBELL. Are you saying the 72 launchers are included in the total request of roughly $368 million?

Colonel HATCHETT. Yes.

Mr. CAMPBELL. If you do the division, you take the quantity, the 23,640 quantity, and divide it into that and you come up to roughly $15,000 a copy, which essentially is the cost of the rocket. So I am trying to find out where the cost of the launcher is located.

Colonel HATCHETT. Truly, the request is 72 launchers, which includes the carrier, plus the 23,640 rockets. That is the cost that you see in the P-1. But the dollars, that includes the 72 launchers and carriers.

Mr. CAMPBELL. Would you provide us a breakdown for the record, please?

Colonel HATCHETT. Yes, sir.

[The following information was received for the record:]

A breakdown of the P-1 line item procurement data for fiscal year 1983 to identify rocket and launcher net costs follows:

[In millions of dollars]

Cost data	Rocket	Launcher	Total
Procurement-quantity	$23,640	$72	
Cost	[1] 213.682	[2] 155.218	$368.900
Less advance procurement	0.000	0.000	0.000
Net cost	213.682	155.218	368.900
Plus advance procurement			53.200
Weapon system cost			422.100
Initial spares			22.300
Procurement total cost			444.400
Procurement-unit cost [3]	0.009	2.156	

[1] Cost includes 23,640 tactical rockets, 3,948 training rockets, initial production facilitization, and a pro rata share of contract cost for engineering changes, potential contract liability, Army in-house support, and required engineering services, according to the full funding principle.
[2] Cost includes 72 launchers, support equipment, and a pro rata share of contract costs as identified in Note 1.
[3] Net cost divided by procurement quantity.

Mr. STRATTON. What is the total figure you are asking?

Colonel HATCHETT. $422.1 million procurement. Then there are 22 million dollars' worth of initial spares.

Another interesting point is that over $1 billion of this program is associated with GFE, which is for that little small bomblet. It has been competing for several years at Lone Star by ARRCOM, therefore, a large portion of my program cannot be competed any more because it's competed every year. And there are very little savings any more to that bomblet after many years of competition, so it's sort of a fixed price for what is in the front end of that rocket.

Therefore, we can't save a lot of dollars in that area.

MULTIYEAR DECISION CRITERIA*

Comparison of proposed unit cost versus competitive DTUPC proposal rocket (primary) launcher.

Estimated cost of establishing second source army second source study risk analysis.

Should cost evaluation.

Multiyear savings for economic lot purchases.

Now, to the criteria as to how we are going to make this decision, let me have the next Vu-Graph.

We will compare the proposed unit cost we will get from Vought this year with that competitive design to unit cost proposal that we got when they were in competition with Boeing. At that time they gave us a learning curve for all of the outyears total, plus the first four, and they had to be willing to sign a contract for the first four.

Therefore, that DTUPC, that design to unit cost, will be compared with the proposed unit cost, and primarily in the rocket since that is where most of the dollars are because at this time we will have already bought 65 percent of the launchers. So, therefore, we are looking at the big saving in the rocket.

The estimated cost of establishing the second source also must be taken into consideration which is about $100 million. Also, the risks that I might run in qualifying that second source. There is a chance that the winning contractors on the second source might have delays and slips that would cause him to slip another year in

* Exact influence to be classified and close hold.

qualifying his rocket, and every year I slip in qualifying him would be another sole source here with Vought.

We intend to run a should-cost evaluation because we will have 4 years of production, therefore, we have a lot of cost data. Therefore, we can easily determine what it should cost in that 5-year multiyear contract with two severable options.

Of course, the multiyear savings for that upfront money for the advanced materials should amount somewhere between 6 and 10 percent. That must be factored into the equation also.

From this criteria the Army will make the decision on whether it's advantageous to continue with the multiyear or if it's necessary to go to the second source.

Mr. STRATTON. Colonel, I think you are giving us probably a little bit more on this than we can absorb. But I am still a little bit in the dark. You are talking about a second source; you are talking about multiyear.

Colonel HATCHETT. And/or.

Mr. STRATTON. I gather that either of those is going to be again out of the hands of this committee. We just come up with the figure you have asked for, and then you are going to play with it anyway you like; is that right?

Colonel HATCHETT. Well, the strategy that was developed was for the second source the program that has been briefed in the past to the Congress. This year's request nominates MLRS for your approval of a multiyear contract.

Now, the decision on whether to go the multiyear or not, of course, is yet to come. It comes as a result of the proposals from Vought and how it lines up against——

Mr. STRATTON. I think here is a good example now. Here's a new program coming in and you are asking us for money. I gather that you are now asking to go into full-scale production, although this thing has only been experimental before hand.

It seems to me that this is the point at which you ought to tell us what this thing should cost or what it's going to cost so that we don't get sandbagged with all of these changes and schedule adjustments and everything else, and next year we can find out whether you have estimated this correctly or not.

Colonel HATCHETT. Sir, this is the fourth year of production.

Mr. STRATTON. Well, this is the first time it's gone into the full-scale production. You just said you only have how many?

Colonel HATCHETT. I am talking about the rocket fire unit.

Mr. STRATTON. I am talking about the whole thing. I mean we are paying for the whole thing. That is the problem here, we jump from rockets to launchers and it happens to be that the rockets are only $10,000; the launchers are $1½ million apiece.

Colonel HATCHETT. Last year we bought 68 launchers. This year we are buying 72, an increase of 4, because that is the maximum rate.

Mr. STRATTON. What are we going to procure these at now, just anything you can negotiate or what?

Colonel HATCHETT. No, sir, this year we have an ongoing contract. It is an option to that contract. I know the exact——

Mr. STRATTON. What is the unit price, and is this an incentive, a fixed price, or——

Colonel HATCHETT. Fixed price incentive.

Mr. STRATTON. At what price?

Colonel HATCHETT. At $1.4 million.

Mr. STRATTON. $1.4 million per copy?

Colonel HATCHETT. We are asking for 72 launchers.

Mr. STRATTON. For 72 launchers?

Colonel HATCHETT. Yes, sir, last year we procured 68. This is an increase of four because the maximum rate is six per month.

Mr. STRATTON. I thought you said you had only one that was out here that you actually had.

Colonel HATCHETT. The delivery time is 2 years, sir.

Mr. STRATTON. Delivery time is 2 years.

Colonel HATCHETT. Lead time is 2 years.

Mr. STRATTON. For a launcher?

Colonel HATCHETT. Yes, sir.

Mr. STRATTON. Very good.

Mrs. HOLT. Mr. Chairman, could I ask something? What is the impact of this cooperative program with Germany? What is the status of that?

Colonel HATCHETT. I might mention that when it comes to the RSI, this program probably has the most successful on going. I have three partners. I also wear a dual hat as program coordinator for Germany, France, and the United Kingdom.

Mrs. HOLT. What is the RSI?

Colonel HATCHETT. Rationalization standardization interoperability.

Mrs. HOLT. I have to learn all of these things.

Colonel HATCHETT. This is the cooperation that we have locked into with an MOU with these three countries. These three countries have our interim technical data package. They have the technical data package to produce in their own countries if they so desire.

The current standing of the procurement supplement among the four nations is that there will be an industrial production group made up of Vought and one contractor from each of their countries and a teaming arrangement or international company to decide which part for the Europeans will be built in this country and where it will be assembled and what will be bought in the United States.

Mrs. HOLT. That has no impact on this?

Colonel HATCHETT. Has no impact on our system.

Mr. STRATTON. General Maloney, I think you are going to have to make some corrections here in your program paper, because the unit cost indicated for this program is $15,000. There is just nowhere that it appears that it's actually $1.4 million.

General MALONEY. Yes, sir, that unit cost is reported based on missiles, rockets.

Mr. STRATTON. I know, but are we buying rockets or are we buying launchers?

General MALONEY. We are buying both, sir.

Mr. STRATTON. Then there ought to be a unit cost for the whole program.

General MALONEY. It is reported in the SAR, sir.

Mr. STRATTON. Well, it isn't reported in the document that you gave to us. According to Mr. McCurdy, by the time the SAR comes in, it's 4 or 5 months out of date.

General MALONEY. Our budget——

Mr. STRATTON. We are getting at something that is very misleading, $15,000, a cheap item for a change. And it turns out it's another $1½ million, like everything else.

General MALONEY. We certainly did not intend to mislead, sir.

Mr. STRATTON. That is what I say, you better correct this thing so that we have an accurate figure for the unit cost.

General MALONEY. We will provide a full and accurate figure.

[The following information was received for the record:]

A breakout of the P-1 line item procurement data for fiscal year 1983, which was provided for the Record, identifies a procurement unit cost of $9,000 for the rocket, and $2.156 million for the launcher. These costs include costs for Tactical Rockets, Training Rockets, and Initial Production Facilitization in the $9,000 rocket procurement unit cost, and launcher and support equipment costs in the $2.156 million launcher procurement unit cost. Also included are pro rata shares of contract costs for engineering changes, potential contract liability, Army in-house support, and engineering services, consistent with the Full-Funding principle.

The $15,000 rocket unit cost referenced earlier in this hearing is related to the unit cost reflected in the President's Budget, and is based on the total fiscal year 1983 Budget Request divided by 23,640 rockets; all other costs just mentioned, including 72 launchers, are included in this calculation.

The $1.4 million unit cost for the launcher mentioned earlier in the hearing represents the fiscal year 1983 production contract hardware cost without all of the support equipment costs and other costs associated with the Full-Funding principle.

Mr. STRATTON. It's easy to fool the committee. We are not very smart, and it takes a lot of time to look over these things——

Mrs. HOLT. Speak for yourself.

Mr. STRATTON. And find out exactly what is happening, and where the money is lost and somehow this and that and the other, and we say, well, I guess you can't blame the Army. This is one program that is getting started and this I think is a darn good opportunity for us to follow this through from start to finish. But the very first item that we have to get started on is already totally misleading.

I don't think there is any place in here where it says $1.4 million per copy.

Mrs. HOLT. Mr. Chairman, I think the program manager should be congratulated for the success he has had in his program, whether we have gotten the cost correct or not. I think he deserves to be congratulated.

Mr. STRATTON. Well, it looks like a program that has got some zip to it. But I don't think we want to award any medals right now. I think we ought to wait a little while.

Can we go to the next one now because I think we are running out of time, Colonel.

General MALONEY. Yes, sir. Sir, I would like to talk to you about the field artillery and ammunition support vehicle which is called the FAASV.

The purpose of the FAASV is to provide Army protected ammunition supplies to field artillery units. We are currently providing ammunition supply with the vehicle which I don't have a picture of. It's an M548 track vehicle with a canvas cover over the back of or cover at all and has a lesser capability to carry ammunition,

does not have any ammunition-handling equipment to make the ammunition transfer quicker, but primarily does not have armor protection for the crew.

We are deeply concerned because the artillery will operate about 3 to 7 kilometers behind the forward edge of the battle area, well within range of Soviet artillery, and in this environment Soviet artillery can rain shrapnel upon the crew; so we want to provide them some protection.

Next chart, please. This is our request for 250 of the armored supply vehicles and this would be the first year of production of this vehicle.

This is our total procurement objective in the first year; fiscal 1983 we would buy the 250 as indicated here, if permitted by the Congress. This would climb to a total of 1,488 vehicles in our total procurement objective.

This is a summary then of the request in fiscal 1983; $111 million for the total of 250 vehicles.

This is our request, sir, and we are prepared to enter production in this program and prepared at this time to answer your question.

Mr. STRATTON. What is the reason for a full track self-propelled armored vehicle for supplying the ammunition to these locations?

General MALONEY. The fundamental rationale, sir, is it provides protection to the crew while delivering the ammunition and transferring the ammunition from the supply vehicle to the howitzer. We have found that we save about 45 percent casualties by using the cover over this vehicle.

Mr. STRATTON. What is this thing? It looks as though it's a tank recovery vehicle.

General MALONEY. Sir, the crane on the front is used in the ammunition pickup point to lift palletized quantities of either 155 or 8-inch ammunition, and put them in the vehicle. This allows then the very quick loading of the vehicle. The vehicle goes forward, sort of mates with the artillery piece and then a conveyor belt is used to move the ammunition from inside the vehicle onto the artillery piece.

Mr. STRATTON. Is this loaded from the front or loaded from the rear?

General MALONEY. I think it's loaded from the top, sir. The onloading occurs through the top and then the conveyor goes out through the back of the vehicle and mates with the artillery piece.

Mr. STRATTON. This is for the corps and division level artillery?

General MALONEY. Yes, sir.

Mr. STRATTON. The artillery pieces are all not obviously located at division headquarters. Is there another vehicle that gets the ammo down to them or is it the same vehicle?

General MALONEY. No, sir; that is the vehicle that is the tactical area transporter. We use the 10-ton truck as a transporter to the rear of this vehicle to bring ammunition into the ammunition supply points.

Behind that 10-ton truck would be trains and long-haul vehicles, semitrailer type.

Mr. STRATTON. You say this supplies the rear area?

General MALONEY. No, sir, this supplies the forward area. The artillery pieces that receive ammunition from this vehicle are located

perhaps 3 to 7 kilometers from the very forward edge of the battle area. So they are within range of Soviet artillery and that is the reason we want protection for the ammunition handling crews and for the artillery crews themselves during the transfer of ammunition.

Mr. STRATTON. What is the corps artillery?

General MALONEY. Sir, there is artillery within the division organization and there is artillery that belongs to the corps commander who supports, who has several divisions under his command. Corps artillery would be placed by the commander in the division zone where the fighting is expected to be the heaviest.

He might have, say five battalions, of corps artillery at his disposal and perhaps there are three divisions forward.

Mr. STRATTON. What kind of guns are we servicing with them?

General MALONEY. Both 155 howitzers and 8-inch howitzers.

Mr. STRATTON. What about, there is a 105, too, isn't there?

General MALONEY. Sir, there is, but the 105 is to be phased out of our inventory. We will in the future have only 155 and 8-inch artillery.

Mr. STRATTON. What about 175's?

General MALONEY. I think we have a few left. But they are phasing out.

Mr. STRATTON. OK.

Mrs. HOLT. Mr. Chairman, I have a question on that.

This Bowen-McLaughlin-York Corp. that produces this, what would be the impact on them? I am trying to get at the industrial base there.

If we delayed this or slowed it down, what would be the impact on the cost of the M109 and M110 and their capability to produce them?

General MALONEY. Ma'am, there would be an impact that I think goes beyond cost. BMY is located in York, Pa., and is our only production base for the M109 howitzer chassis and the gun cradle and for the M88 recovery vehicle, and would probably be the producer for the few artillery ammunition supply vehicles.

BMY's business future is dismal. The only assured vehicles they have in the future are the M88 and we are probably not going to produce any more M110's. So they will have very little of their program. Only the FAASV and M88 in the future.

They need a production rate of about 60 vehicles a month, they tell us, and we believe that is reasonable for them to continue production. So should the FAASV not be produced, we would either need to increase production of other items not now contemplated or we might see the likelihood of their going out of business, which would be a serious issue for this country.

We would lose our base to produce this class vehicle.

Mrs. HOLT. We have really been concerned about the deterioration of our industrial base.

General MALONEY. Yes, ma'am. We are concerned about that, of course. We are more concerned about having armored protection for our artillery ammunition crews.

Mrs. HOLT. I don't have any other questions.

Mr. STRATTON. You have one more now of the recovery vehicles.

General MALONEY. Sir, this is the one, the onground, is the M88 recovery vehicle, and in the air is the M109 howitzer. Both of these items are produced by BMY in Pennsylvania. The M88 is our prime retriever, for example, for the M1 tank, and for the M109 howitzer, for the very heavy class of vehicles.

We submitted a request to you for 180 of these at $157.8 million. We need continuing assets of this type to allow for the recovery of our heavy vehicles such as the M1 tank, the M60 tank, the M109.

Mr. STRATTON. Is this big enough to handle an M1?

General MALONEY. Yes, sir; it is. That is our intended recovery vehicle for the M1.

Mr. STRATTON. Can we use a modified M60 for that purpose?

General MALONEY. Sir, you can sometimes tow a tank with another tank under ideal conditions. But their draw bar pull, the ability to lift the tank out of an obstacle or out of a ditch is not sufficient for many of the recovery jobs.

You do need a large piece of material handling equipment such as the M88. We have looked at this, because this is an expensive item and we would like to minimize its buy. But we really feel that 2,218 are about the total amount that we require.

Mr. STRATTON. Isn't the basic chassis a tank chassis?

General MALONEY. The basic chassis is the M109 chassis, similar to that of the self-propelled artillery piece, very similar to a tank, but in this case optimized for heavy recovery work, for its transmission and drive train are different.

Mr. STRATTON. The unit cost is what?

General MALONEY. Sir, the program acquisition unit cost in escalated dollars is $1.2 million. The average unit procurement cost, the rollaway cost in fiscal 1983 dollars is $877,000.

Mr. STRATTON. According to my sheet here you have the fiscal 1982 supplemental cost at $900,000. How did that escalate so rapidly?

General MALONEY. From 1982 to 1983, sir, it sounds like it went down a little. It was $900,000 in 1982.

Mr. STRATTON. I thought you said $1.2 million.

General MALONEY. That is program acquisition cost, sir. Total program divided by the number of units.

Mr. STRATTON. The unit cost is $876?

General MALONEY. It is $877, sir; in fiscal 1983.

Mr. STRATTON. OK. Any questions?

Mrs. HOLT. No, sir.

Mr. STRATTON. Mr. Campbell.

Mr. CAMPBELL. No, sir.

Mr. STRATTON. Does that wind it up, General?

General MALONEY. Sir, we are prepared to stay as long as you like; but we have no other prepared testimony.

Mr. STRATTON. OK. Very good.

Mrs. HOLT. We are going to miss you.

General MALONEY. I will be back.

Mr. STRATTON. Thank you very much.

[The following questions were submitted to the witness to be answered for the record:]

Fighting Vehicle System [FVS] Procurement

Question. What is the current status of FVS production? What was the impact of FMC's 11-week labor strike? Have you recovered from the strike?

Answer. As of 22 March 1982, twenty production vehicles have been delivered with ten more deliveries scheduled by March 31, 1982. The FMC 11-week strike between April–June 1981 caused an equivalent week-for-week delay in vehicle deliveries from the fiscal year 1980 production contract. Based on Cost Performance Report data from FMC, the strike cost impact was approximately $9.6 million. This cost increase will be covered with existing fiscal year 1980 program funds. Complete recovery from the strike is projected for July 1982 when the 100th vehicle is delivered—end of fiscal year 1980 funded delivery period.

[FVS] Testing

Question. How are the FVS production vehicles doing in test? What new technical and production problems have you encountered?

Answer. FVS production vehicles are demonstrating remarkable performance during initial production testing conducted by the contractor. This testing has included 29 TOW missiles fired, over 39,000 rounds of 25mm ammunition fired, and over 19,500 miles logged. The overall mean miles between failure (MMBF) demonstrated is 306. With a production goal MMBF of 240, the FVS is achieving reliability over 27 percent higher than expected.

Some producibility and quality problems have been discovered, but they are well within normal, expected levels and are controllable. No new technical problems have been identified.

FVS Fielding

Question. When will the FVS be fielded? What fielding problems do you foresee?

Answer. The first unit to receive FVS is the 1–41 (Mechanized) Infantry, 3d Armored Division in Fort Hood, Texas. It will receive the IFV on 28 March 1983. Vehicles produced prior to those going to Fort Hood are being distributed to training and testing facilities both here and in Europe. The first unit to receive FVS in Europe will do so in September 1983. No obstacles or major problems have arisen which could jeopardize this fielding schedule.

MLRS

Question. As you know, the MLRS has been in a low-rate of initial production and the IOC is now set for March 1983 with 9 launchers and 60 rockets per launcher. However, there was a strike at FMC (prime contractor) in early 1981 which I understand resulted in a schedule slip and some cost growth. What is the impact of the strike on cost and schedule? Given the recent FMC strike, will FMC be capable of meeting planned delivery schedules?

Answer. Although the eleven week strike by the Machinist Union at FMC resulted in a four month slip in the Multiple Launch Rocket System (MLRS) program, and estimated cost growths of $7.5 million in Research, Development, Test, and Evaluation (RDTE) and $5 to $6 million in procurement (these costs are under negotiation), the carrier delivery schedule has been revised such that the cumulative number of required carriers will be recovered by the end of the fiscal year 1981 procurement delivery period.

The carrier produced by FMC are provided as government furnished equipment (GFE) to the MLRS prime contractor, Vought Corporation. The four month delay of these carriers in turn resulted in a four month delay in Vought's delivery to the Army of Self-Propelled Launcher Loaders (SPLLs), of which the carrier is a part.

The MLRS Project Manager attempted to minimize the cost impact of the FMC strike by directing Vought to delay hiring of SPLL production personnel until the extent of the strike impact was known. Substantial costs were still realized, however, in the forms of retention of personnel already hired on the program, extension of vendor support, and extension of test support effort.

The four month schedule slip included the Operational Test (OT) III and the Initial Operational Capability (IOC) dates. The delayed delivery schedule will be recovered by the end of the fiscal year 1981 delivery period such that the MLRS fielding plan is not affected except for the IOC unit.

FMC is progressing very satisfactorily with its revised carrier delivery schedule and has delivered the first carrier as scheduled, with the second and third nearing completion with no problems anticipated.

Question. I understand that the Army is considering multiyear procurement of the MLRS. Is there any major advantage to the Government in going multiyear rather than establishing a second source for production of the rocket? Which is the most cost effective approach to the Government—multiyear or establishing a second source production?

Answer. The most cost effective approach for the Government, which has as its major advantage the realization of the greatest program cost savings and cost avoidance, is multiyear procurement. The total savings and cost avoidance on a procurement of 334,356 rockets is estimated at $193 million, or 11.5 percent on a contract of $1.684 billion.

The Multiple Launch Rocket System (MLRS) acquisition strategy also includes provisions for developing a second source should the current prime contractor's multiyear contract proposal not reflect the advantageous packaged rocket unit costs projected during the highly competitive Validation Phase, after which Vought Corporation was selected as the prime contractor. This threat of second source development is a major factor contributing to the estimated multiyear contract savings and cost avoidance of $193 million.

Although some savings should be realized if the MLRS is second sourced, they are less than those achievable through a multiyear contract as additional rockets in educational buys to develop the second source, initial production facilitization, and qualification of the second source's rockets and production line would all be required. These requirements do involve some risk. Also, significant additional savings due to competition are not anticipated as the Validation Phase competition absorbed most of these savings.

Question. How is the current MLRS production contractor selected? Was this a sole source award?

Answer. The current prime contractor, Vought Corporation, was competitively selected in April 1980 following an intense, thirty-two month Validation Phase competition with the Boeing Aerospace Company; the contract was thus not sole source.

Question. Was the current production contractor required by the Government to invest in the production facility with his own capital or was this provided by the Government?

Answer. No, to both parts of the question. Vought Corporation and some of its major subcontractors invested $50 million in capital equipment and facilities to produce Multiple Launch Rocket System (MLRS) hardware and enhance their competitive position in seeking to win the program. The Government also invested $50 million in special tooling and test equipment.

Any contractor may have had to make a similar investment to produce MLRS hardware considering required production rates. The safety and hazardous aspects of the rocket and its submunitions dictated a production plant location in a remote area with sparse population, and with adequate storage and transportation available.

Field Artillery Ammunition Support Vehicle (FAASV)

Question. How close to the forward edge of the battle area will the Field Artillery Ammunition Support Vehicle (FAASV) be used?

Answer. The FAASV will operate with the artillery about 3 to 7 kilometers behind the forward edge of the battle area.

Question. What will happen in terms of probable personnel casualties and effectiveness of artillery operations if these vehicles were not authorized?

Answer. With FAASV we predict 45 percent fewer casualties, 9 percent fewer tubes lost, and 12 percent more ammunition fired. This shows the importance of covering the ammunition and giving cover to the 6 crew members that do not work inside the howitzer. The decrease in tube loss and increase in ammo fired are also indicators of the increase in effectiveness.

FAASV—Self-Propelled Howitzer (SPH) Industrial Base

Question. Without the long lead funding that the Army said it needed in fiscal year 1982, how is the Army able to move into full-scale production in fiscal year 1983?

Answer. BMY is prepared to go into full-scale production in fiscal year 1983. However, without the long lead funding, delivery of the first FAASV will be delayed at least 6 months.

BFV Second Source Savings

Question. Since by the end of the fiscal year 1985 buy, about 50 percent of the total requirement will have been purchased, what savings or benefits can be derived from second sourcing?

Answer. There are three major areas of potential benefit to the Army from second sourcing: mobilization base, economics and flexibility. To date, the dominant area of concern has been the economic considerations. Sound rationale has been provided to prove either savings or loss to the government; however, the lack of a data base has precluded the development of a firm conclusion. As a result, the Army requested industry to provide a production analysis including cost estimates and today we are assessing the results of that data. The Army intends to make a decision in May so that OSD can approve our budget requests in time to reach Congress in June if a second source is economically feasible. All three areas mentioned will weigh in the final decision.

Fiscal Year 1983 Second Source Funds

Question. Does the fiscal year 1983 request include funds for second sourcing?

Answer. No. The fiscal year 1983 request for $842.5 million for 600 vehicles reflects a sole source program. If the Army decision is to go with a second source vehicle producer, then we will request an addition to the Army's Total Obligation Authority (TOA) from Office Secretary of Defense and will be back in June to request authorization and appropriations from Congress.

FAASV—Self-Propelled Howitzer (SPH) Industrial Base

Question. What would be the impact of delaying the Field Artillery Ammunition Support Vehicle (FAASV) program on the Self-Propelled Howitzer (SPH) industrial base and how many M88's, M109's, and M110's would have to be produced monthly to maintain the SPH industrial base without FAASV?

Answer. The impact on BMY, our only producer of Self-Propelled Howitzers, would be extremely detrimental. The only program for which BMY now has firm orders in the timeframe that FAASV would be produced, is the M88, and the rate of production that is forecast for M88 is only 15/mo. BMY is the most likely company to produce FAASV. There is a high probability that BMY will go out of business should they not produce FAASV. BMY states that an overall rate of 60 vehicles per month is what they consider to be an economic rate for the company. Ideally this would mean a rate of 20 vehicles per month on each line to include the M88, M109, and FAASV; the M110 line is effectively cold by this April (1982). As long as total production for the company is 60 vehicles per month, however, one line can be producing more than 20 if one of the other lines is running at less than 20.

BFV Alternative

Question. The Appropriations Committee in its fiscal year 1982 conference report directed the Army to "consider procuring or leasing" alternative systems for testing in conjunction with the 9th Infantry Division's testing of the BFV (Bradley Fighting Vehicle). What is the Army's position on the necessity for this alternative analysis? What is the status of the testing?

Answer. The Army has considered the proposal to test the Bradley FVS versus alternatives in conjunction with the 9th Infantry Division test bed. Such a test will generate only performance data, and adequate performance data is already available to clearly demonstrate the superiority of the Bradley FVS versus alternatives. The real question is total system effectiveness, and an equipment test will not address this issue. The BFVS production decision was based on thorough analysis, reviews, and studies including the Congressionally mandated Crizer Task Force and Mahaffey Special Study Group. The 1979 cost and operational effectiveness analysis update most recently demonstrated the system's cost effectiveness. The 9th Division is testing the light, rapidly deployable force needed to support our national interest in a wide variety of scenarios. The Bradley FVS is designed as a key member of the heavy force combined arms team required for Europe and limited alternative scenarios. The test bed is in danger of being overwhelmed by the magnitude of its test requirements which already include the Infantry Maneuver Company, Infantry Battalion Antiarmor Company, Brigade Engineer Company, Combat Electronic Warfare and Intelligence Battalion, Cavalry Brigade (Air Attack), and Infantry Division Communications Tests. It is neither chartered nor equipped to conduct detailed comparative equipment testing, and the necessary instrumentation and test facilities to accomplish that type of testing are not available. The Fort Lewis facilities cannot

accommodate the Bradley FVS long range weapons systems and Yakima Firing Center is heavily taxed already. The Army does not believe that such a comparison would be in its best interest.

Bradley Fighting Vehicles Cost Growth

Question. I understand there was a $1.6 billion program cost growth since September 1981. This growth included $512 million due to schedule change, $566 million due to change in estimating methods, and $199 million due to increased costs for support equipment. What do you mean by a change in estimating method? Explain why the program cost is increasing at such a high rate.

General Whelan. As I reviewed earlier, the estimating increase was due to two factors; updating our data base from early production experience and a more conservative approach as to the benefits of competition. In the case of the rate of increase, I have explained the cost changes due to the Office of the Secretary of Defense inflation factors and the distortion caused by the Selected Acquisition Report guidelines as they pertain to product improvements, automated test equipment and estimating. Another factor was program stretchout, however this appears to be correcting itself in the fiscal years 1984–1988 budget process. Another aspect of cost increases in automated test equipment, which I did not include earlier, was an increase of $106 million for more realistic estimates in the area of software maintenance. This was based on the experience of other programs who are leading the way in the field.

The other factor of rate increases is, of course, time. I am constrained by the Selected Acquisition Report to report only the approved program. As a result, I can update significant changes only in the month of December. Therefore, what appeared to you as a large change over a three month period, was in fact, only the incorporation of the fiscal years 1983–1988 budget as the approved program.

BFV Inflation

Question. I understand last year's Program Manager's original fiscal year 1983 budget submission contained unique inflation indices which were higher than Department of Defense standard indices. However, when Office Secretary of Defense recently raised inflation indices, these additional dollars were added on top of your already higher amount. This created a budget excess in the Bradley Fighting Vehicle account. I understand the excess in fiscal year 1983 is about $20 million. It would appear, therefore, that there are $20 million that could be used to fund other programs in fiscal year 1983. Is this correct?

General Whelan. In the outyears, fiscal year 1984 and beyond, those additional funds are under review at Department of the Army. I have done my own review and have determined that approximately $700 of the $787 million which was added could be used for other purposes. Included in the $787 million is $20.8 million for fiscal year 1983. Since I have not applied FVS peculiar indices to all of my budget request, but only to the hardware contract portion, that amount which applies to support costs is not added to inflation above Office of Management and Budget (OMB) indices. Furthermore, during April 1981 our budget projection for fiscal year 1983 was reduced by OMB indices by more than 30 million dollars; therefore, this recent increase does not reflect an excess, but only a partial resortation of the money required to account for inflation during the period of performance. In my opinion, therefore, the $20.8 million is not in excess to the Bradley program.

Mr. Stratton. We will adjourn until Wednesday morning at 10 o'clock.

[Whereupon, at 4:45 p.m. the Subcommittee on Procurement and Military Nuclear Systems of the Committee on Armed Services adjourned, to reconvene Wednesday, March 24, 1982.]

DEPARTMENT OF DEFENSE TACTICAL AND SUPPORT VEHICLE PROGRAMS, AMMUNITION PROGRAMS, AND OTHER PROCUREMENT

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Wednesday, March 24, 1982.

The subcommittee met at 10:10 a.m. in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. LEATH. The committee will be in order.

This week the committee will continue to review the Defense Department's fiscal year 1983 budget request. Today the committee will conduct a triservice hearing to receive testimony on "Other Procurement" programs. These Other Procurement programs include tactical and support vehicles, communications and electronics equipment, and other support equipment.

Tactical and support vehicles include trucks, semitrailers, passenger vehicles, and tractors, to name only a few.

The communications and electronics equipment consists of items to provide fixed, semifixed, and mobile strategic and tactical communications support.

The other support equipment generally includes equipment such as chemical defense equipment, tactical bridging, shop sets, construction equipment, and special equipment for testing.

This is the first year that the committee will authorize Other Procurement programs and Ammunition activities. The fiscal year 1983 budget request for Ammunition and Other Procurement activities is over $18.5 billion which represents over 20 percent of the total procurement funds requested.

There are over 1,300 categories of items in the Other Procurement and Ammunitions accounts. Today the committee will, of course, not attempt to review all 1,300 categories but will primarily focus on tactical and support vehicle programs and communications and electronics equipment programs.

The committee has asked the witnesses to review the major programs. However, we are particularly interested in several of the major new-start programs and programs which have shown funding increases since fiscal year 1982. Therefore, the committee would like the witnesses to review in detail the following:

The high mobility multipurpose wheeled vehicle program.

The commercial and cargo utility vehicle program.

The 5-ton truck program.

Offshore procurement and nontactical or administrative use vehicles, and

The rationale for determining when aging vehicles should be replaced.

The witnesses this morning are Mr. Charles Bernard, Director of Land Warfare, Tactical Warfare Programs, Department of Defense; Maj. Gen. Lawrence Skibbie, Director of Combat Support Systems, Office of the Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army; Rear Adm. John Paul Jones, Vice Cmdr., Naval Facilities Engineering Command, Department of the Navy; Brig. Gen. W. G. Carson, Director of Materiel Division, Installations and Logistics Department, U.S. Marine Corps; and Brig. Gen. William Bowden, Deputy Director of Logistics, Plans and Programs, Department of the Air Force.

Since we have an ambitious schedule before us, I suggest that we get started.

Mrs. Holt, I think, is on the way, but is not here yet. Mr. Kramer, do you have any comments you want to make at this point?

Mr. KRAMER. The only comment I would have, Mr. Chairman, is perhaps for Mr. Campbell to comment on how the committee has gotten jurisdiction over this area.

As I recall somewhere in the darkest recesses, this used to be simply a function of the Appropriations Committee, but we have now taken jurisdiction, at least in terms of authorization, ammunition, and other O. & M. accounts, is it not?

Mr. CAMPBELL. That is correct, Mr. Kramer. Last year the authorization had included a provision which had allowed this committee to begin to authorize the Other Procurement accounts as well as Ammunition. So, this is the very first year we have had an opportunity to look at those two accounts.

Mr. KRAMER. It was simply an appropriated item.

Mr. CAMPBELL. That is correct, we had no jurisdiction over it.

Mr. LEATH. Mr. Bernard, I understand that you will be the first witness, and that you will be followed in order by General Skibbie, General Carson, Admiral Jones, and finally General Bowden. You may proceed.

STATEMENT OF CHARLES W. BERNARD, DIRECTOR OF LAND WARFARE, TACTICAL WARFARE PROGRAMS, OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING, DEPARTMENT OF DEFENSE

Mr. BERNARD. Mr. Chairman, members of the committee, I welcome this opportunity to address the subject of procurement of administrative-use vehicles. I will not delve into the other parts of the defense vehicle programs because General Skibbie and the other gentlemen from the services will do that.

I would like to provide you with the Office of the Secretary of Defense's position on procurement of administrative-use vehicles. As you know, section 783, general provision of fiscal year 1982 DOD appropriation bill, placed a prohibition on the purchase of administrative motor vehicles that are manufactured outside the United States or Canada unless the contractor was selected

through competitive bidding without a price differential, except it does not apply to contracts under $50,000 or existing contracts, or agreements.

The Department of Defense urgently requests the exclusion of this restriction for fiscal 1983.

The DOD foreign administrative-use vehicle program was developed by DOD to help carry out the 1977 Culver-Nunn amendment that quoted the policy of the United States that equipment for use of personnel of the Armed Forces of the United States stationed in Europe should be standardized or at least interoperable with equipment of other members of the North Atlantic Treaty Organization.

The law specifically directs the Secretary of Defense to carry out procurement procedures to pursue this policy, and this program has become particularly symbolic among our allies of our sincerity and resolve to cooperate on the two-way street.

Moreover, the German Government based their decision to participate in the NATO AWACS program in part on the existence of this program to purchase German vehicles for U.S. forces in Germany.

The major advantages provided by the European vehicle procurement program are increased standardization and improved supportability at reduced costs. Because we have been purchasing the same basic vehicle as the host Ministry of Defense since the program began in 1979, we have now achieved some degree of standardization between United States and host nation forces, among the different U.S. services, and between models of the same type vehicle.

This standardization permits us to be interoperable with host nation forces, thereby providing mutual support capabilities, both in peacetime and in war. The adoption of the amendment requiring competition would catch the program in midstream and would return us to having makes and models of the same vehicle type all different from those of the host nation, or at least give that possibility.

The implications to our driver and mechanic training programs, technical data requirements, special tool needs, and spare parts availability is self-evident.

We have found that the improved supportability of the European vehicles has significantly enhanced our readiness while resulting in reduced cost. The in-commission rates for the European vehicles are significantly higher than their American counterparts, primarily because of the extended pipeline times to obtain replacement American parts. With the European vehicles, we purchase needed spares on the local economy, thereby reducing the size and expense of the benchstock requirements which resulted from trying to support the many makes and models of American vehicles.

More importantly, the improved spares support of the European vehicles in wartime is also assured because Government agreements contain the provision that U.S. forces can draw on the host nation vehicle spares system with the same priority as the host nation forces.

It should be pointed out that each vehicle type now purchased was subjected to a thorough life-cycle cost analysis before the decision was made to purchase host nation assets. The program is even

more cost effective now because of current exchange rates and transportation costs.

Therefore, we feel the competitive requirement will only benefit other nonhost foreign manufacturers, as opposed to the U.S. automotive industry, while proliferating types of vehicles in our inventory and degrading readiness and increasing costs to the U.S. taxpayer.

The position of the U.S. commanders in Europe is that the current program is cost effective, highly effective, significantly beneficial to a broad spectrum of players, substantially reduces operating costs, and bears most favorably on wartime logistics support capability. We would like to defend the program against any reduction.

Now I would like to address the subject of competitive bidding for the contracts. The Department of Defense is normally a strong supporter of competition. Unfortunately, our estimate is that the opening of the procurements to competition will, in fact, not benefit our U.S. automotive industry as intended. In actuality, though the dollar amounts for the procurements may appear large, when it is recognized that this dollar amount is divided among various vehicle body styles such as carryalls, trucks, and others, it is much less attractive.

We foresee the most likely result as a proliferation of nonhost foreign makes and models within the European fleet, degradation of logistics support and, again, no benefit to the U.S. automotive industry.

I might add that we do not intend to extend this program beyond the three countries where it was underway. We hope that the 1983 appropriation bill does not include the same restrictive legislation that was included in the 1982 bill as it adversely affects agreements with our allies as well as the support of our own forces.

The present contemplated buy from our three NATO allies combined will still constitute less than 10 percent of our total administrative vehicle requirements. While conscious of our relationships with our allies, we are nevertheless extremely sensitive to the plight of the U.S. automotive industry.

Several actions have been completed or initiated within the last year that should have a favorable impact on the U.S. automotive industry, and you will hear about those in detail from the gentlemen who follow me.

But an example is, on April 8 the Army awarded a $628 million, 5-year contract to AM General Corp. of South Bend, Ind., for 5-ton tactical trucks. On May 22, the Army awarded a $250 million, 5-year contract to Oshkosh Truck Corp. of Oshkosh, Wis., for 10-ton tactical trucks. The options in those contracts will bring the total value to $2 billion.

Several smaller awards have also been made in recent months to the automotive industry. Other procurements are in progress, and the Department of Defense has requested the military departments and the Defense Logistics Agency to expedite those planned purchases that could immediately impact the U.S. automotive industry.

In summary, the Department of Defense fully supports the services' vehicle procurement program but strongly requests the committee to exclude restrictive language from the 1983 bill. Following

me will be representatives of each service. The lead speaker is Maj. Gen. Lawrence Skibbie, Director of Combat Support Systems, Department of the Army.

I will be pleased to answer any questions you may have.

Mr. McCURDY. Mr. Chairman, may I ask a quick question?

Mr. LEATH. Mr. McCurdy.

Mr. McCURDY. I was interested in your statement about competition on the overseas buys between the host nations and the U.S. manufacturers.

What if you just had competition between the host nations and the U.S. manufacturers? In other words, if the host nation is Germany, the German manufacturer and the U.S. manufacturer as opposed to Europeanwide?

Mr. BERNARD. Mr. McCurdy, this is not legally possible. Under the Trade Agreement Act which implemented the general agreement on trade and tarrifs the competition cannot be restricted to specified countries.

Mr. McCURDY. Do you have any data that suggests that the host nation would win most of the time, or a nonhost? Is there any experience here? Tell me about the experience.

I apologize for coming in right at the middle of your statement, and I know the other gentlemen will follow with more details. But what kinds of cars, automobiles, or vehicles are we talking about? I mean, what portion of these are actual automobiles or pickups, off-the-shelf types of things?

Mr. BERNARD. Literally all of them are off-the-shelf vehicles. I will give you an example. I was in Europe last year and the group commander of an air defense battalion and I went off in his Volkswagen bus which he had outfitted as a traveling command center—again, a peacetime traveling command center which has no fragment protection. But he had an office there, he had a way to sleep when he was out with his troops. He was using a Volkswagen bus.

I was picked up in a Rabbit, Volkswagen Rabbit, whatever they call it over there.

Mr. McCURDY. Easy now, I drive a Rabbit, too. So, be careful, will you?

Mr. BERNARD. Generally, I guess what I am saying is that the administrative-use vehicles are existing vehicles. When we started looking at the cost and the life-cycle cost of administrative-use vehicles we went to the MOD's in other countries and said, "What are your forces using for administrative use vehicles," and essentially, "can we use those to an advantage."

We looked at how they handled their movement of people, what their special needs are.

Mr. McCURDY. Wait a minute. Are you telling me that for a staff car for the base commander, et cetera, that if they are in Germany then they are likely to use a German-made vehicle, there is no standardization, or what are you saying?

Mr. BERNARD. What we are trying to do when the host nation has German vehicles, we try to standardize on the same thing.

Mr. McCURDY. All right, let us cut through all of this. If you are on an Air Force base or an Army base in Germany and the host country, of course, is West Germany, and the host government drives Mercedes or Volkswagens—German-made cars—are you

saying that you are trying to get the Air Force or the Army to use the same kinds of cars?

Mr. BERNARD. Not always in all conditions. But certainly, the Volkswagen bus which the host nation uses, was found to be very attractive.

Mr. MCCURDY. You are still not responsive to my question. My question is, if the host country and the host government uses a particular car, are you saying you kind of standardize all U.S. vehicles to the host country standards? Yes or no.

Mr. BERNARD. Yes; not all U.S. vehicles but some of them.

Mr. MCCURDY. As opposed to using a Ford that may be used on an airbase in Oklahoma you are saying that because they are in Germany they are going to use German-made vehicles.

Mr. BERNARD. Not the tactical vehicles but some of the administrative-use vehicles, buses for example.

Mr. MCCURDY. We are not talking about tactical, are we?

Mr. BERNARD. Absolutely not.

Mr. MCCURDY. We are talking about vehicles, just cars and pickups, and buses and those kinds of things, right?

Mr. BERNARD. Right.

Mr. MCCURDY. That is what I am getting at. Now why, what is your basic, simple reason why you think you have to do that?

Mr. BERNARD. Well, as I said in my opening, certainly the pipeline for getting spare parts is quicker if you can go around the corner to the local Volkswagen dealer and not have to stock equipment, spare part stocks, gaskets. The downtime of vehicles is shorter. The cost of transportation and stockage is less. Because the downtime is shorter, a possibility exists for making a small dent in the size of the fleet.

Mr. MCCURDY. Are there political reasons why we are trying to do this, also?

Mr. BERNARD. Absolutely.

Mr. MCCURDY. I mean, is the host nation saying, "Listen, by God, if you are going to be over here in our country then we expect you to buy German cars?"

Mr. BERNARD. No; I do not think they said it in that way, Mr. McCurdy.

Mr. MCCURDY. Is that the impression we are getting?

Mr. BERNARD. The implication you should get is that when we are in Germany with our forces, doing the same kind of things that German forces are doing in a lot of these administrative-use vehicles, we see no reason not to use the same kind of equipment.

Mr. MCCURDY. What percentage of the cars do we have now, vehicles now, that you would say comply with that? What do we call it, "other country concept" or whatever?

Mr. BERNARD. At the moment?

Mr. MCCURDY. Yes.

Mr. BERNARD. Less than 1 percent.

Mr. MCCURDY. Less than 1 percent. What percentage would it be if you were to have this budget package?

Mr. BERNARD. Less than 10 percent. Less than 10 percent of the administrative-use fleet.

Mr. MCCURDY. How many vehicles are we talking about in the administrative fleet in NATO?

Mr. BERNARD. On the order of 4,000 to 8,000 vehicles.

Mr. MCCURDY. That is the best we can get, 4,000 to 8,000?

Mr. BERNARD. Yes.

Mr. MCCURDY. That is all the U.S. standard vehicles in NATO, is that what you are saying?

Mr. BERNARD. Yes.

Mr. MCCURDY. How many would be in the United States, does anybody have that figure?

Mr. BERNARD. More than 10 times that. I do not have an exact figure.

Mr. MCCURDY. What is your function?

Mr. BERNARD. In the Office of the Secretary for Research and Engineering I have the land warfare, which includes vehicles.

Mr. MCCURDY. Is there a motor pool? Who has the motor pool, are you the head of the motor pool; is that it?

Mr. BERNARD. Yes; except again I have to give you a weasel answer.

Mr. MCCURDY. That is what I am trying to avoid.

Mr. BERNARD. I am involved with administrative-use vehicles. Those that are under 10,000 pounds are handled by the GSA rather than by the services themselves. On a lot of these vehicles we are talking about a GSA standard vehicle.

Mr. MCCURDY. Are we talking about GSA doing this, or are we talking about the DOD? GSA does it for DOD?

Mr. BERNARD. In the host nation agreements it is DOD.

Mr. MCCURDY. Could someone provide—if you cannot give it to me today I would like to have it for the record—I want to see a percentage breakdown of vehicles by car, truck, et cetera, bus, the actual number of vehicles that we have in DOD.

I want to see the actual number by age, if you have a category such as staff cars, or general delivery, or motor pool or what. If you have 10,000 Fords out there that are 1978 Fords, I want to see the figures. I want to find out the ages in breakdown, for instance, from 1965 up to the present date, how many categories you have in each, how many numbers you have in each category.

Can you provide that for the record?

Mr. BERNARD. I certainly can.

Mr. MCCURDY. Would that be a huge document?

Mr. BERNARD. Oh, no, I am sure that we can break that into a usable list that we can give you for the record.

Mr. MCCURDY. To be clear, I want it for the United States, the CONUS and NATO, the entire system, how many cars we have, how many vehicles we have compared with what you are asking for today.

I want to see what kind of modernization program you are talking about.

Mr. BERNARD. Yes; that is a doable thing; I think we can do it.

[The following information was received for the record:]

The following chart portrays numbers, age, and types of vehicles in our fleet. It should also be pointed out that the vast majority of the vehicles identified in this chart are of the U.S. manufacture. In fact, only approximately 1.8 percent of the Army fleet and 3.4 percent of the Air Force fleet is foreign made. The Navy has an insignificant number of foreign made vehicles. This information has been added to give some indication as to our tendency to buy American.

NUMBER OF ADMINISTRATIVE VEHICLES

[By year of manufacture]

Type vehicle	Prior to 1970	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Sedans:														
Army	55	212	681	1,099	1,807	32	1,486	1,227	1,886	1,884	298	52	0	0
Navy	15	24	47	102	167	21	439	458	1,066	588	424	158	33	3
Air Force	26	23	353	189	449	5	17	154	17	1,112	668	320	49	0
Station wagons:														
Army	0	12	52	9	123	0	264	217	227	12	138	9	2	0
Navy	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Air Force	14	8	54	121	118	3	4	159	1	1,050	7	14	1	0
Buses:														
Army	504	370	368	307	76	34	300	330	681	80	149	322	319	0
Navy	101	54	27	13	62	75	52	73	123	122	82	84	133	1
Air Force	350	135	2	78	226	3	13	0	305	218	576	146	67	0
Ambulances:														
Army	32	24	96	457	263	10	17	0	116	10	25	0	64	0
Navy	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Air Force	274	18	12	100	193	53	1	280	0	32	88	25	0	0
Trucks:														
Army	2,731	2,593	1,661	3,492	814	9,314	4,281	5,923	4,639	4,306	2,966	2,013	395	0
Navy	3,365	455	517	493	1,588	1,945	2,453	1,365	4,914	4,946	1,316	3,792	1,975	232
Air Force	1,806	526	1,403	1,694	1,203	2,348	4,163	2,661	1,282	6,064	4,440	3,071	4,402	1,219
Fleet percentage:														
Army	5.3	5.2	4.6	8.6	5.0	15.1	10.2	12.4	12.1	10.1	5.9	3.8	1.3	.....
Navy	10.3	1.6	1.7	1.8	5.4	6.0	8.7	5.6	18.0	16.7	5.4	12.0	6.3	.7
Air Force	5.6	1.6	4.1	4.9	4.9	5.4	9.5	7.3	3.6	19.1	13.0	8.1	10.2	2.7

[1] Included in Navy sedan recap.

892

Mr. McCURDY. Thank you, Mr. Chairman.

Mr. STRATTON. Have you completed your statement?

Mr. BERNARD. Yes, sir.

Mr. STRATTON. Do we have any other questions?

Mr. LEATH. Mr. Chairman?

Mr. STRATTON. Mr. Leath.

Mr. LEATH. Mr. Bernard, in your statement you referred to the fact that the two-way street is one of the reasons why OSD would like to purchase vehicles from NATO allies.

In terms of defense items, do you have any idea how much we did purchase from our NATO allies in fiscal years 1981 and 1982, and how much did they purchase from us? In other words, what would be the balance of trade for defense-related purchases, say, in those 2 fiscal years?

Mr. BERNARD. Mr. Leath, I cannot give it to you exactly but in those years the number, the ratio, has been running about 20 to 1 in our favor. I cannot give it to you for 1981 and 1982 but I will provide data for 1978 through 1980. However, we estimate that ratio with Germany covering fiscal years 1976–80 is running 21:1.

Mr. LEATH. I think it would be desirable to include that in the record.

[The following information was received for the record:]

VEHICLES

The figures for 1978 through 1980 are on this chart:

BALANCE OF TRADE IN DEFENSE EQUIPMENT WITH MAJOR NATO TRADING PARTNERS

[In millions of dollars]

	1978	1979	1980
Total Europe:			
1. U.S. sales	684.4	970.1	1,845.0
2. U.S. purchases	101.1	134.9	195.3
3. Ratio	6.8:1	7.2:1	9.4:1

Source: 1. U.S. sales—Selected foreign military sales deliveries reported by DSAA plus commercial exports of selected munitions list items reported by Department of State.

Source: 2. U.S. purchases—Imports of selected items for DOD use reported by Department of Commerce. N.B.: The catalog of selected items is limited to defense equipment, including components and spare parts. Transactions involving subsistance items, petroleum products, publications, training, repairs and other services are not included in the data presented. Also note that while the question specifically asks for data from fiscal years 1981 and 1982, it is impossible to provide same due to the absence of a most contemporary data base. The data for fiscal years 1978, 1979, and 1980 should be viewed as presenting a trend for fiscal years 1981 and 1982 behavior.

I have no further questions, Mr. Chairman.

Mr. STRATTON. Mr. Kramer.

Mr. KRAMER. I just have one, Mr. Chairman.

To switch systems, and I assume that what you would like to do is simply be able to place your orders without competition in terms of host-nation purchases. What kinds of dollars are we talking about as additional costs in your procurement account if we do in fact do that as you suggest?

Mr. BERNARD. Mr. Kramer, are you asking me what is the additional cost that we put in the account for the noncompetition, or the total cost?

Mr. KRAMER. In other words, I assume that this is not done, as you have indicated in your statement, necessarily under the guise of cost savings. This is for accessibility of parts, uniformity, conven-

ience, political considerations; but it is not necessarily a cost consideration, the purchase.

What kinds of additional costs, if any, are we talking about in terms of taking the approach that you are asking be taken?

Mr. BERNARD. One of the costs that is a consideration is the life-cycle cost, and I think there is reasonable expectation that the life-cycle cost would be cheaper.

Mr. KRAMER. Are you talking about the maintenance?

Mr. BERNARD. Yes, sir. We have about a 17-percent number in there for currency variations. At the moment it is in a very favorable position. But the currency variation amounts would probably be more than it would take to handle the difference between competition versus no competition.

Mr. KRAMER. Well, let me try to phrase this another way. If we were to make solely American purchases versus the kind of fleet mix that you are talking about, what would be the cost differential one way or the other?

Mr. BERNARD. Then you would like that as a life-cycle cost rather than just the purchase cost?

Mr. KRAMER. Both ways.

Mr. BERNARD. All right. Can I get that for the record for you?

Mr. KRAMER. Do you have an approximate idea of what it would be?

Mr. BERNARD. No, and I would like to waffle a little bit because I do not think the exact same vehicle would be purchased in either case. If you said, "I want to buy an American carryall" it would not necessarily be the same vehicle as a Volkswagen bus.

Mr. KRAMER. What is the total dollar value of the program you are talking about?

Mr. BERNARD. On the order of $83 million.

Mr. KRAMER. The total amount of foreign purchases you would like to make in 1983?

Mr. BERNARD. No, that is 1982 through 1986. It is $75 million and the yearly average is about $33 million.

Mr. KRAMER. So, we are going to be asked to authorize approximately—although it may not be a line item—about $33 million in the 1983 budget for this administrative-use vehicles program; is that right?

Mr. BERNARD. That is approximately correct, yes.

Mr. KRAMER. I guess what I want to know is, how much would we be authorizing if we were to make solely American purchases? I guess that is the bottom line. I am trying to find out whether we are talking about a 5 percent, or 1 percent differential, or 20 percent.

[The following information was received for the record:]

Your question cannot be answered specifically. We would expect some but no significant differential in acquisition costs. However, operation and maintenance costs would be higher. We would be forced to stock spare parts, pay for transportation of the vehicles to Europe and increase our in-house mechanics. Also, we risk a decrease in operational readiness rates since we cannot draw on local maintenance sites. This area cannot be quantified at this time. Additionally, European logistic support for U.S. fuel efficient automobiles is non-existent or in the embryonic stage.

Mr. KRAMER. Thank you, Mr. Chairman.

Mr. STRATTON. Mr. Bernard, I am sorry that I was late. I do not want to run over things that have already been touched on, but let me ask you first of all, this legislation is in the 1982 bill that vehicles manufactured outside of the United States and Canada cannot be purchased unless the contractor was selected through competitive bidding without a price differential, except it does not apply to contracts under $50,000.

What have you done differently from what you were doing as a result of this legislation? I take it your position is that this is a very burdensome restriction and you want it removed. What have you done to comply with what we have said and how has it changed the picture?

Mr. BERNARD. Well, Mr. Stratton, what we did was, we started the administrative-use vehicles host-nation purchase program in 1979.

Mr. STRATTON. I know that. I am trying to find out what this particular thing did to change it or slow it down.

Mr. BERNARD. When the 1982 restriction came on we did not initiate any other buys during that period of time.

Mr. STRATTON. You are not going to buy any more trucks from now on, is that it, until September, or October 1 of this year; is that it?

Mr. BERNARD. No, sir. But essentially the foreign purchase that was scheduled for 1982 was stopped.

Mr. STRATTON. Where have you bought your trucks, is what I am saying, since this thing went into law, or whatever it is.

What are these administrative-use vehicles anyway, are you talking about the Mercedes Benz that the generals ride around in, or what?

Mr. BERNARD. No, sir, there are no sedans so far in any of this administrative-use purchase.

Mr. STRATTON. What do you mean by administrative vehicles, then?

Mr. BERNARD. Volkswagen buses, pick-up trucks, small vehicles. A lot of buses, we have a lot of use for buses in Germany.

Mr. STRATTON. Do you have some breakdown as to what you have and what you have bought because I think it will help us to understand exactly what you are doing if you could tell me just what you are buying, what you have bought.

Buses, we cannot even find buses for our own mass transportation systems in this country. We just had to buy some Japanese buses, I think, in New York City, and we got some French buses up in the Albany area. I am not sure that the bus situation is particularly productive.

What else, besides buses, do you buy? What do the generals ride around in, do we import Cadillacs from the United States or what?

Mr. BERNARD. There are a lot of imported Chevrolets from the United States that they ride around in, or Fords.

Mr. STRATTON. What was General Croesen riding in when he got hit?

General SKIBBIE. Mr. Chairman, he was riding in a borrowed Mercedes that had been loaned by what amounts to the Germany FBI because of the threats that had been made against him.

Mr. STRATTON. What do you use for the sort of thing that we see going on in the Pentagon all the time, driving people around? What kinds of automobiles do you use for that?

Mr. BERNARD. As I said earlier, I was driven around in a Volkswagen Rabbit on a couple of occasions. But we still have a lot of American cars.

We are still in a short-fall position with the administrative-use vehicles, and when this issue came up in 1979 we started making purchases. We did not suddenly modernize the fleet of administrative-use vehicles. We still have 6- and 8-year-old sedans over there that are driving people around.

Mr. STRATTON. How significant has this program been, how much has it represented?

Mr. BERNARD. On the order of $30 million a year.

Mr. STRATTON. Thirty what?

Mr. BERNARD. Million dollars.

Mr. STRATTON. Thirty million dollars a year?

Mr. BERNARD. Yes, sir.

Mr. STRATTON. Now, you are talking about our NATO allies, you talk about host countries, what are we talking about?

Mr. BERNARD. United Kingdom, Germany and Italy, and to date it is mostly Germany.

Mr. STRATTON. You say that the Germans entered into an agreement to participate in the NATO AWACS in return for the understanding that we would buy their vehicles.

Have they in fact gotten into this NATO AWACS, are they participating in it?

Mr. BERNARD. Yes, sir. They put about $500 million—in 1977 dollars—in AWACS so far.

Mr. STRATTON. Have they threatened to cancel this if this is not removed?

Mr. BERNARD. Mr. Chairman, I do not think they have threatened to cancel if this was not removed. It was a whole series of concerns that we had in the past. As I told Mr. Leath, the ratio of United States to allied purchase of equipment has been in the order of 20 to 1 in our favor.

There were attempts to say, can we buy some things from the allies to try to help. We never had any thought that we could obtain a 20-to-1 ratio, but we thought we could show some faith.

It seemed reasonable to say that you could drive a Volkswagen in Germany as long as the Germans were driving a Volkswagen in Germany for administrative use. That seemed like a symbolic gesture. Certainly, I do not want to denigrate $30 million a year because it is real money, but it was not an attempt to balance AWACS or anything like that.

Mr. STRATTON. You are familiar with the status of the American automobile industry, are you not?

Mr. BERNARD. Absolutely.

Mr. STRATTON. You are familiar with what has happened with regard to Japanese imports.

Do you not think it might be a little smarter to make our purchases, if we are going to make them from our allies, in some other area than in the one industry which America always regarded

itself as being predominant in and which has undergone a catastrophic collapse?

It seems to me that the Army, or the Defense Department, ought not to be immune to a recognition of what has happened. There is nothing that the American people are "uptight" more about than they are with respect to imported automobiles, particularly the ones from Japan.

Are there not other things that you could get that might take the place of this $30 million?

Mr. BERNARD. Well, Mr. Stratton, the bill is not enacted. The administrative use vehicles in Germany, for instance, could be bought competitively and at the lowest price, it could very possibly be Japanese vehicles that we would use in Germany for administrative use because we have a lot of requirements, one of which is that you buy at the lowest cost when you can.

The Defense Department is very sensitive to the condition of the automotive industry in the United States. As I read in my opening statement, we have started a get-well project in trucks to the tune of about $2 billion. The truck fleet in the U.S. Army, for instance, was one of those kinds of things that was always shoved back because it was not glamorous, it was not as attractive and we could keep running trucks longer.

So, there is a considerable recognition of the automotive troubles and there have been significant purchases of trucks in the last couple of years.

Mr. STRATTON. You know, even if we knock this thing out in the committee it will be put back in on the floor. I think this one came in on the Senate.

We knocked out an amendment on the House side, but it still came back in on the Senate side. The Senator from Detroit is a member of the Senate committee. So, I think even if we wanted to go along with you I think it is almost inevitable that you are going to get it in on the floor in some form or another. I think it is going to be almost impossible to eliminate in view of our current situation with regard to the automobile industry.

Any of us who have automobile plants or automobile parts plants in our districts are well aware of this. The pressures are very considerable.

Now, you say that this will save money. How much have we saved, or how much do you anticipate that we will be saving?

Mr. BERNARD. There is an effort going on right now to determine that. The Defense Audit Service has been doing an investigation on how much the savings are and will be. First, one of the kinds of things they found is that they do not have enough people to look at the records, and they are not keeping good enough records to see how much they saved.

But they are in the process of getting us information along those lines. I cannot tell you right now.

Mr. STRATTON. So, you do not really know whether it has saved any money or not.

Mr. BERNARD. It was predicted on a life-cycle basis to save money. We do not have the experience yet to say what it is.

Mr. STRATTON. Does not Ford produce automobiles in Europe?

Mr. BERNARD. Yes, sir.

Mr. STRATTON. Do they produce trucks?

Mr. BERNARD. I do not think so, but I do not remember.

Mr. STRATTON. Well, if you bought Fords you would be fulfilling the idea that the money is going into the German economy and is providing jobs for German workers. But at least you see a Ford designation on the vehicle instead of a Mercedes or Volkswagen, or something of that kind. Has that been thought of?

Mr. BERNARD. Certainly, Mr. Stratton. What I said earlier was, we try to look at what the host nation is using in terms of administrative vehicles and follow them to some extent. If it did not make any sense for our use of the vehicle we would not follow them.

But if they are using Fords and they come out to be the right vehicles, we would be using them. In the United Kingdom about 40 percent of the vehicles bought there are manufactured by U.S. subsidiaries.

Mr. STRATTON. You point out that this is in line with the policy of the 1979 Culver-Nunn amendment, that is the policy that we are going to be standardizing, and rationalizing, and making interoperable the equipment in NATO.

But even at the time that amendment was going through, the major areas where we had no interoperability at all were areas like communications and things of that kind. Whether you rode the same automobile or drank the same kind of beer, or something or another, was not nearly as important as getting some kind of ability to communicate between one force and another force.

To what extent have we solved that particular problem? I have heard this standardization and interoperability for a long time. That is why we were supposed to go to the M-1 tank because the Germans were going to take our turbine engine and we were going to take their gun. The Germans would not touch our engine with a 10-foot pole, and their gun has had some problems with regard to the ammunition.

So, we are not very much closer to interoperability there. What has happened in these other areas of interoperability that are even more crucial, in terms of communications, have we solved that yet?

Mr. BERNARD. Yes, sir, and no, sir. We have certainly worked on it. No; we have not solved it. But we have, for instance, NATO identification systems. As you are probably well aware, the efforts that go on between ourselves and NATO tend to resemble a glacial ooze as far as progress is made. But we are working on joint communications systems.

Mr. STRATTON. I mean, after all, we are over there not just as an exercise and to try and please our allies, we are over there trying to demonstrate that if we are attacked we are prepared to respond effectively to it.

Do you not think it would be a little bit smarter to spend some time trying to establish interoperability in communications than interoperability in buses?

Mr. BERNARD. Mr. Chairman, I guarantee you, much more effort is going on to standardize communications than to standardize the administrative use vehicles. Many more people are working on that.

Mr. STRATTON. How much time do we have before the Russians are going to attack, what is the estimate? Do we have enough time to solve that problem?

Most of you are too young to remember the big one, but we won that in 4 years. We cannot even get a ship built in less than 7 or 8 years, and a plane takes 4 or 5. I just wonder how much time we have left to try to concentrate on the essentials here instead of spending so much time over what appears to me to be a relatively minor point.

Mr. BERNARD. I do not have the answer to the overall question, but let me say that I have on many occasions discussed these relationships with our German allies. An indication that there is some willingness on our part to use some of the things they use is worth a lot in the morale that we have and the relationships that we have in working together. I think that is apparent, when we see a change in the way we do business it does cause us considerable pain with our relationship.

Mr. STRATTON. I mean, after all, we are putting 300,000 of our troops over there on their territory, all 300,000 of them which, I am sure, would much rather be home. If they want something to build up their morale I would think that would be pretty effective.

Mr. Mavroules.

Mr. MAVROULES. I do not think I have any questions, Mr. Chairman. I am going to continue in the vein that you have taken.

One of the things that personally disturbs me, to be very honest with you, I could not care less if we have a truck built in Germany or a car, or whatever, I am not too affected by that.

But what does bother me, and very deeply as a matter of fact, is making a condition that perhaps if we purchase their equipment we in turn to at least in a small degree obtain their participation in the use of the AWACS to the tune of $560 million.

I think that is a very poor analogy to be utilizing before this committee. Let me tell you why. The chairman stated that about 250,000, 300,000 American military personnel are in that part of the world. Whether we want to believe it or not, we are indeed doing something for their economy.

What I would like to know is—and of course I am sure you do not have the answer this morning, but maybe you can research it and at another time report it to the committee—is the so-called trade imbalance, the economic imbalance relative to what we are pouring into that part of the world through our military system and personnel, compared to what they are giving us in return. Include on top of that the major increases, the real increases that we have in our defense budget which are being criticized throughout the country and perhaps other parts of the world, versus what they are doing in their own country.

I want to be cost-effective. If it means competition, fine; if it means competitive bidding, fine, I do not have too much argument with that.

But the analogy that because of our participation in purchasing of their vehicles and their participation in the AWACS system is ridiculous compared to what we are spending, the billions of dollars that we are spending, pumping into that economy and also the

economies of other parts of the world. That is the distressing part that kind of bothers me to at least a small degree.

These, I think, Mr. Chairman, are the kinds of figures we ought to be getting into. If we are going to talk about the economy, if we are going to talk about our own industrial and automobile system here in the United States which is suffering immensely. On top of that the millions, and millions of American dollars that are being spent in that part of the world, as far as I am concerned, is a one-way street.

Now, I can appreciate their participation during that war we had in Vietnam, I am sure they should be commended for their participation, the upgrading of their defense spending. But there is a limit. This is where we start talking about defense outlays. The thing we ought to be talking about is just what kind of a trade imbalance do we have, or economic imbalance do we have, with the European NATO nations versus the United States. You are going to find out that we are going to come out awfully short.

Actually, I could be supportive, it does not bother me to that great a degree. But I wonder if the people in Michigan would be supportive. The chairman made a good point. You know and I know that this will be brought out because I think it was adopted in the House as a separate amendment, I think you are correct, Mr. Chairman.

The part that bothers me the most is the economic imbalance. This is not a direct question to you, it is just a feeling that I have. I would like it very much if you would research that for us—that may be yours, it may be some other department's, but let us talk actual dollars.

Mr. BERNARD. Certainly, I know that has been discussed, it has been a matter of considerable pain not only to Congress but to the Defense Department, and there have been years of discourse on it.

I will be pleased to find some of the discussions and bring them over here. However, I can tell you that according to Commerce, the United States had a trade surplus with the European Economic Community of $9.3 billion in 1979 and an $18.1 billion surplus in 1980. These surpluses equate to 220,410 U.S. jobs in 1979 and to 428,970 U.S. jobs in 1980.

Mr. MAVROULES. I refer to payroll, money being spent in that type of country, the whole gamut if you could. I know it will take some research.

Mr. BERNARD. All right.

Mr. MAVROULES. I think that will be very helpful.

Mr. BERNARD. I think it has been done, and I think it is a matter of my asking some people to get it for you.

Mr. MAVROULES. I would appreciate it.

[The following information was received for the record:]

I think this chart may provide an insight into this area:

DOD International Balance of Payments—Accounting Period No. 1 For Period Oct. 1, 1979 to Sept. 30, 1980

Total NATO:	*Millions*
Pay	$1,124.1
Foreign nationals	855.8
Equipment	109.4
Construction	262.4

Infrastructure	163.0
POL	1,309.7
Materials and supplies	404.0
Services (contractual)	1,394.3
Other payments	294.2
Offshore procurement	.2
Other	1.2
Foreign currency change	15.0
Total	5,903.3

1. POL and a big portion of Services are a real drag on NATO's economics. In Germany, POL is a totally imported item which really doesn't help the Germany economy. The largest part of services is probably utility carts. Here again this expenditure does nothing for the Germany economy.

2. We should point out that the U.S. had a 1980 trade surplus of $18 billion with the European Economic Community (EEC) which involves most of NATO.

Mr. McCURDY. Mr. Chairman.

Mr. STRATTON. Mr. McCurdy.

Mr. McCURDY. I know we have to get to the other witnesses. I want to ask them when they are coming up if they too can have—if it is possible—at their fingertips the figures for their passenger car budget and commercial. I know each has a different category for it—commercial versus passenger, 5-ton truck category. That they will give us those figures. Maybe each could just identify, first of all when they first come up what those figures are so that we can have some grasp of what the total package looks like.

I am talking about not just offshore but offshore versus CONUS.

Mr. STRATTON. Thank you.

Mr. Mavroules, I think you made a very good point because the problem here, I think, is that we have forgotten history. We have forgotten some of our recent history. I remember back—I cannot recall what year it was—in the early 1970's we had another Nunn amendment, it was the Jackson-Nunn amendment.

At that time Mike Mansfield was a member of the Senate and he was urging that we withdraw our troops, they have been there long enough. The Jackson-Nunn amendment provided that unless the allies where we had troops stationed—and this is mostly Germany—would be prepared to offset the costs of that undertaking that we had in large part by buying American equipment, we would withdraw those troops in proportion to the extent that they failed to offset the costs.

It was that particular amendment which convinced them to start buying some American aircraft and other military systems as part of the off-set. Then people forget.

This Culver-Nunn amendment comes along in 1977 and says that we have to buy all of our equipment abroad so that we have a two-way street. The fact of the matter is that we are going two-and-a-half ways because here we are, we finally got the allies to off-set the costs of our personnel over there and then they say, "Well, look, you, we have been buying all of these planes and all of those tanks and everything from you, you ought to be buying somthing from us."

So, they have really just maneuvered us into the position of being right back where we were when we started. Civilians in the Pentagon for years have been agonizing over how terrible it is that we should be selling all this stuff to our allies and not buying any-

thing, and forgetting all about what this was all about in the first place.

Mr. MAVROULES. If I may, Mr. Chairman. We have made military commitments in many parts of the world. We know what it costs the American taxpayers for that military commitment.

I think we are willing to accept that, there is no problem on that part. The more cogent point is the fact that those American dollars are being spent in those countries, those American dollars are not coming back here to the United States. Therefore, it is a great asset to their own economy.

When we make conditions I think that we have to take into consideration not only the military expenses that we have, that we can accept because we feel it is necessary. But what we are doing to the economies of these other countries while our own economy is staggering, as you well know, that is why I requested that kind of figure.

I am not being critical, by the way, I am just trying to give you a thought which I think is quite pertinent to what we are talking about here this morning.

Mr. STRATTON. If there are no further questions I think we should probably move on because we have some other witnesses.

Mr. Bernard, we appreciate your testimony and we will keep your suggestions and recommendations under consideration.

Our next witness, as I understand it, will be General Skibbie, the Director of Combat Support Systems for the R. & D. section of the Department of the Army.

Your testimony, as I understand it, General, is directed toward other vehicles, not only the administrative vehicles we have been talking about but some of the other individual vehicles that are part of the Army's program.

STATEMENT OF MAJ. GEN. LAWRENCE F. SKIBBIE, JR., DIRECTOR OF COMBAT SUPPORT SYSTEMS, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT, AND ACQUISITION, DEPARTMENT OF THE ARMY

General SKIBBIE. Yes, sir, Mr. Chairman.

Mr. MCCURDY. Mr. Chairman, may I take a minute? Could I get those figures from each of the gentlemen? I have been seeing them pass notes back and forth, I think they have those figures. I am not going to be able to stay for the full day. If we can just get the administrative vehicles for each very quickly. Do you have that with you?

General SKIBBIE. Yes, sir. Let me give you three numbers, sir. The first number will be the total for tactical and support vehicles that we are buying out of our accounts, and that is $1.3 billion for fiscal year 1983. That constitutes 7 percent of the Army's procurement request.

Of that $1.3 billion, $78 million is for nontactical vehicles. That would include the subset which you are referring to.

Of that $78 million, if there are no restrictions, we would intend to spend $14 million for the offshore procurement of vehicles in Germany. That would be 1 percent of our total vehicle request.

I would just like to clarify that there are no sedans or stationwagons in that offshore procurement, it is strictly nontactical vehicles other than sedans and stationwagons.

Mr. McCURDY. But in the $78 million that is within CONUS there are sedans?

General SKIBBIE. Yes, sir, that $78 million includes all nontactical vehicles.

Mr. McCURDY. All right. The Air Force, do you have that?

General BOWDEN. The Air Force will give you the following numbers, sir: We have a worldwide requirement for 116,000 vehicles. The sedan population is 2 percent of that number. Additionally, we have about 6 percent that deals with ambulances and buses. Of that 116,000, 54 percent the following categories, pick-up trucks——

Mr. McCURDY. I think I have that.

General BOWDEN. All you do is multiply those percentages times 116,000.

Mr. McCURDY. Do you have dollar figures for those?

General BOWDEN. The total value I do not have. I have the $350 million in 1983, and then I have another sheet that I can provide for the record that shows the specific quantities for each one of those.

Mr. McCURDY. All right.

General BOWDEN. For example, modular ambulances. We will be buying 320 for $7.4 million.

Mr. McCURDY. If you can just provide that for the record.

General BOWDEN. Yes, sir.

[The following information was received for the record:]

COST OF SEDAN POPULATION

The Air Force fiscal year 1983 vehicle program is $350.4 million. This figure represents 6 percent of the Air Force other procurement request. Of the $350.4 million, $303.7 million or 87 percent is for commercial design administrative use vehicles. If there is no restrictive language in the fiscal year 1983 appropriations bill, the Air Force intends to procure administrative vehicles in Germany, England, and Italy which will collectively total $31.0 million or 10 percent of the administrative vehicle dollars. The Air Force will not buy sedans or stationwagons in Europe.

Mr. McCURDY. Let me quickly get to the Navy and Marines, then, for their passenger and administrative vehicles. Do you have the dollar figures?

Admiral JONES. For administrative use vehicles, passenger carrying, trucks, and trailers, but nontactical, the fiscal year 1983 procurement request or budget request is $29.9 million. That is on one of the viewgraphs that is attached to the testimony. Actually it shows it is $33.7 million but if you subtract out the tactical vehicles, $3.8 million, it is $29.9 million.

We have no proposed buy overseas in fiscal year 1983 because of the language in the 1983 Appropriations Act. Our proposed 1982 buy, if you are interested in that—I think that is what you asked about—would have been just over $1 million, and that included about $760,000 in the Pacific Area and just over $250,000 in the European Area; no sedans in any case.

Mr. McCURDY. Thank you. If you would get me the break-downs that I asked for earlier.

Admiral JONES. Certainly.

[The following information was received for the record:]

OFFSHORE AND CONUS INVENTORY AND PROCUREMENT

The inventory and proposed fiscal year 1983 procurement of offshore and CONUS administrative vehicles are:

Offshore inventory, 7,443; fiscal year 1983 procurement, 0.

CONUS inventory, 33,280; fiscal year procurement, 2,099.

General CARSON. Marine Corps tactical vehicles, $172.6 million; for commercial vehicles, $18.3 million. No offshore procurement.

Mr. MCCURDY. Thank you very much.

Mr. STRATTON. I do not know whether I missed it or not, but do you have the percentages there of the offshore procurement, your totals? General, you said $1.3 billion?

General SKIBBIE. Yes, sir. But only 1 percent of that would be for offshore procurement of the standardization of vehicles, that would be $14 million. A fraction over 1 percent.

Mr. STRATTON. What about the Air Force?

General BOWDEN. The Air Force in fiscal year 1983, we have a European requirement for 1,190 vehicles, $31 million. They deal with forklifts, dump trucks, truck-tractors, panel trucks, carryalls, pick-ups and buses.

Mr. STRATTON. I just wanted to get a percentage. You say in 1983. You are already barred from getting them in 1983, are you not?

General BOWDEN. That is our request.

Mr. STRATTON. You put a request in in anticipation that we will go along with Mr. Bernard's suggestion that we remove this, is that the idea?

General BOWDEN. Yes, sir.

Mr. STRATTON. That is pretty optimistic.

General BOWDEN. For the past years I have the quantities.

Mr. STRATTON. What percentage would that be?

General BOWDEN. Of the total buy in 1978 we had 1.2 percent; in 1979 we had 7 percent; in 1980 we had 9 percent; 1981, 10 percent; 1982, 6 percent.

Mr. STRATTON. What was the 1983?

General BOWDEN. The 1983 is 8.8 percent.

Mr. STRATTON. Thank you very much. General, go ahead.

General SKIBBIE. Mr. Chairman, I appreciate the opportunity to discuss the Other Procurement, Army appropriation with you. My formal statement is lengthy and at your staff's request I have included information about the Army ammunition request because the hearings on that appropriation, I understand, have been canceled.

With your permission, I would like to enter that statement for the record and summarize it with a short briefing.

Mr. STRATTON. Without objection the statement will be included in the record.

General SKIBBIE. Other Procurement, Army or OPA, as we abbreviate it, constitutes about 25 percent of the Army's procurement requests. It consists of a multiplicity of items. This year, it has 288 different items in the request.

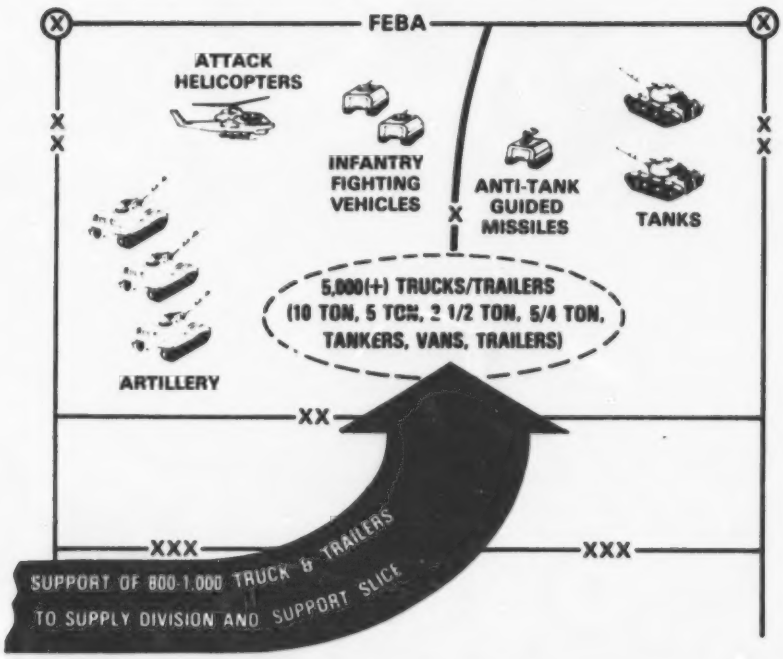
They are arranged in these three categories. Today I have been asked to discuss primarily tactical and support vehicles, construction equipment, and materials handling equipment which comes out of the third category shown.

Now, the kinds of equipment procured here are important to the Army not only because of the magnitude of procurement resources but because they provide the Army the ability to have a cutting edge. You are not going to find any aircraft; you are not going to find any missiles, tanks or guns, or ammuniton here. However, this is the equipment that allows those missiles, tanks, guns, ammunition to be the cutting edge.

Now, our Chief of Staff, General Meyer, talks about the "Sinews of Support." He terms the "Sinews of Support" these logistics functions shown here. They are necessary for a military force to accomplish its combat mission of moving, shooting, and communicating. All of these logistics functions depend upon Other Procurement, Army (OPA) either for the item itself or for the ability of that item to function.

For instance, you cannot get ammunition without materials handling equipment and you cannot get fuel unless you have fuel tankers which are procured in Other Procurement, Army. Repair parts are handled by materials handling equipment. Casualties and evacuation come with ambulances procured in OPA, also medical equipment is in this account. Supply and services, again, transportation and materials handling equipment. For engineer, you get the construction equipment out of this account; and transportation, of course, you get the trucks as well as the watercraft and railcraft.

So, all these critical logistics functions so necessary for the combat force are supported or made possible by the Other Procurement, Army account.



Just to give you an idea of the magnitude of our problem. For 1 division for 1 day of combat it requires 800 to 1,000 trucks and trailers to move the supplies—ammunition, fuel, rations, repair parts—to move those supplies into the division area, and that does not even include the more than 5,000 trucks and trailers that you already have in that division required for it to accomplish its mission.

That is for 1 division for 1 day of combat. Now, multiply that by 24 divisions, which is our force structure in the Active and Reserve components as well as our separate brigades and regiments, and support groups and commands and you get an idea of the magnitude of our problem.

But our problem is not so much modernization as it is in some of the other areas, as it is a problem of vehicle shortages. I think I can show you that on the next slide.

1982 OVERVIEW

	Requirement [1]	Assets	Fleet over age [2]
10-ton truck	10,500	3,170	0
5-ton truck	54,500	38,181	4,360
5/4-ton truck	138,000	99,710	20,920
SUSV	268	0	0
Construction equipment	8,829	5,122	2,490
Material handling equipment	24,706	17,645	7,723

[1] Equipment active and reserve POMCUS, some war reserve.
[2] 10-ton age criteria—20 yr; 5-ton age criteria—20 yr; 5/4-ton age criteria—7 to 12 yr; SUSV age criteria—15 yr; construction equipment age criteria—10 to 20 yr; and material handling equipment age criteria—11 to 18 yr.

What I am showing here are six categories of equipment, the six basic categories that I was asked to discuss by Mr. Campbell. The requirement—and that is not the total Army acquisition requirement but merely that portion of the requirement needed to outfit our forces and provide us with a limited war reserve and some POMCUS stock. Those quantities generally represent about 60 percent of our Army acquisition objective.

The current assets that we have to apply against that requirement, and the the overage status of those assets are shown. I think it gives you an idea of our problem to see that we have 30 percent of our required 10-ton trucks. We have about 70 percent of our minimum requirement of 5-ton trucks; about 72 percent of our 5/4-ton and under trucks.

The small unit support vehicle is a new requirement, and I will discuss that separately. Construction equipment, we have about 60 percent, and finally, materials handling equipment we have about 60 percent.

Now, of our assets you can see that roughly 11 percent of our 5-tons are overage, and the age limitation we are using is 20 years; approximately 20 percent of our five-quarter tons are overage, and we are using 12 years there. The construction equipment, about half of it is overage, and materials handling equipment, about 40 percent is overage.

So, we have a dramatic shortfall in our equipment as well as a serious age situation. So, we are playing catch-up ball.

10-TON TRUCK; FISCAL YEAR 1983 WEAPON SYSTEM PROCUREMENT REQUEST—$374.1 MILLION

[Dollars in millions]

	Fiscal year 1981 and prior	Fiscal year—			To complete	Total
		1982	1983	1984		
RDT&E	$2.0					
Wpn. sys. proc	$92.9	$194.5	$374.1	$219.5	$1,633.6	$2,514.6
Quantity buy	638	1,274	2,370	1,335	8,909	14,526

Note.—Ammunition and fuel transport; supports fielding of new systems; and fiscal year 1983—3d yr of a 5-yr multiyear contract.

Now, I want to discuss each one of those separate items, each one of those six categories separately.

First of all, the 10-ton truck. I think it is a success story. It supports new equipment that is coming into the field, the Patriot, the MLRS, the DIVAD and it is used as an ammunition and fuel transporter.

We are on the fiscal year 1983 appropriation which allows us to enter into the 3d year of our 5-year multiyear contract for the 10 ton. The contract was arrived at competitively. It is a fixed-price contract with economic price adjustment. So, we think we are in a very good business situation there. Oshkosh Motors of Oshkosh, Wis., has that contract.

Mr. STRATTON. When you say that is for ammunition and fuel transport, where do you deliver the ammunition with that particular vehicle?

General SKIBBIE. That would be for movement into the division area but mainly for distribution and support within the division

area. It is a very heavy-duty expanded mobility tactical truck. It is what we would refer to as an eight-by-eight. It has good mobility both on and off roads.

Mr. STRATTON. That obviously is not protected with any armor. We had General Maloney here yesterday or the day before showing us a new vehicle that is going to cost you $600,000 or something like that to bring it up to within 6 km of the front line. But that is all armored.

General SKIBBIE. That is right. This would deliver to what we call the ammunition transfer point which is in the division area, and that is where that vehicle, referring to the FAASV—the field artillery ammunition supply vehicle—picks it up and then takes it up to the artillery pieces.

So, you are right, this does not have any armor.

Mr. STRATTON. But this is the vehicle that will bring it, I think you said something like 6 km back?

General SKIBBIE. Yes, 6 km back of the forward line in some cases. Further forward in other cases.

Mr. STRATTON. The forward line?

General SKIBBIE. Yes, sir.

Mr. STRATTON. Then, when you have to take it up to the forward line, you do not have any armored vehicle.

General SKIBBIE. I am not sure I understand the question. To take it from the ammunition transfer point?

Mr. STRATTON. Yes.

General SKIBBIE. Forward?

Mr. STRATTON. No, I mean, you have ammunition requirements that are between the division artillery and the front lines.

General SKIBBIE. Yes, sir. It would be the other calibers of ammunition, tank and antitank, mortar and small arms, machinegun ammunition, rifle ammunition. Of course, generally, the forward troops come back to the ammunition transfer point, pick up the ammunition and take it forward. In other cases, units deliver the ammo further forward.

Mr. STRATTON. That is just as vulnerable to being hit and blown up, is it not, as the ammunition being taken to the division artillery.

General SKIBBIE. Well, the HMMWV will have some ballistic protection against mortar rounds and against artillery rounds. It will not be as heavily armored in any way as the FAASV. Of course, you have to realize that in the FAASV you have a point target because counter-battery fire is going to be drawn in by that artillery unit that the FAASV is supporting. It is going to be sitting there. They are going to be located there.

Whereas the HMMWV, as it moves it is a moving target; it does not go to a central, concentrated point.

I merely add, you have to again remember that we do have only 30 percent of our 10-ton truck requirements here; and of course it is a new system we are entering into our inventory.

Mr. STRATTON. How much is that, what is the price of that?

General SKIBBIE. In 1983 it is $157,000 per vehicle, that is the average. Actually, it varies by model because you have some that are tankers, some that are tractors, and some that are cargo.

Mr. STRATTON. Has that contract been awarded?

General SKIBBIE. It was awarded in 1981, that was the first year. It was competed for on the market and it was awarded to Oshkosh. Oshkosh won it on a low-cost basis.

Mr. LEATH. Mr. Chairman, could I ask a question, please?

Mr. STRATTON. Certainly.

Mr. LEATH. You say we only have 30 percent of our requirements in that area, General.

General SKIBBIE. Yes, sir.

Mr. LEATH. Based on the contracts that you have awarded, how many years—as I recall it was multiyear?

General SKIBBIE. It is a multiyear contract.

Mr. LEATH. How many years?

General SKIBBIE. For 5 years, and 1983 will be the 3d year of that multiyear contract.

Mr. LEATH. Under that contract and under what you have done since you initiated the contract, and on through to the end of the contract, what percentage of the requirement will you have at the end of that contract?

General SKIBBIE. We are 30 percent now. At the end of fiscal 1983 we will be up to 55 percent of our Package II requirement; at the end of fiscal 1984 we will be up to 68 percent. I will have to ask my smart people behind me to give me the 5th year of that contract.

Mr. LEATH. Can you do that?

General SKIBBIE. We will figure that out and give you the 5th year of the contract and what that will bring us to. We will provide that to you before I finish.

Mr. LEATH. Thank you.

General SKIBBIE. May I continue?

Mr. LEATH. Yes, please.

Mr. STRATTON. Wait a minute, General. You have a German contractor on that 10-ton truck.

General SKIBBIE. That is correct, sir. We have two contractors. That is for a very small quantity, 96 this year, for $22.4 million; that is called the MAN truck. It is specifically to support deployment of the Pershing II missile deployed to Germany. It also will be used for the ground-launch cruise missile which is also deployed to Germany.

Mr. STRATTON. This is not covered by the restriction?

General SKIBBIE. No, sir, because I believe the restriction covered any contracts entered into after that point in time. That contract was entered into prior to that time.

Mr. CAMPBELL. This is a tactical vehicle.

General SKIBBIE. Pardon?

Mr. CAMPBELL. The difference is, it is a tactical vehicle.

General SKIBBIE. Both are tactical.

Mr. CAMPBELL. The restriction only covered the administrative use vehicles.

General SKIBBIE. Yes, true.

Mr. STRATTON. Go ahead.

PRODUCT IMPROVED 5-TON TRUCK; FISCAL YEAR 1983 WPN SYS PROC REQUEST—$392.7 MILLION

[Dollars in millions]

	Fiscal year 1981 and prior	Fiscal year—			To complete	Total
		1982	1983	1984		
WPN sys proc	$76.2	$295.1	$392.7	$275.0	$633.4	$1,672.4
Quantity buy	971	3,569	4,936	3,538	6,939	19,953

Note.—General cargo transport (ammunition, fuel); supports fielding of new systems, tri-service program; and fiscal year 1983—3d yr of a 5-yr multiyear contract.

General SKIBBIE. The next one is what we call a product improved 5-ton truck (M-939 series) and again, if I could refer you back to the previous chart where we show that we had about 70 percent of our minimum requirements.

Again, this contract is a good business decision we feel because again it is a multiyear contract and it was competitively arrived at. It was awarded to A.M. General Corp. It is on a fixed-price basis with an economic price adjustment and again, in fiscal 1983 we will be in the third year of that multiyear contract.

This fiscal 1983 buy will take us about 8 percent of the way toward our goal. So, if we are at 70 percent of that minimum of Package II requirement now, at the end of 1983 we will be at 78 percent and we will continue at about that same rate for the remainder of the contract. So, we will end up close to 90 percent of our minimum of Package II requirement when we end that multiyear contract.

Mr. STRATTON. That is pretty much the standard six-by-six?

General SKIBBIE. That is right. It is a product improved version of the standard 5-ton six-by-six. They are both diesels. This one, the M-939 series has an automatic transmission, improved cooling; tilt hood, better reliability characteristics, and a number of other product improvements.

Mr. LEATH. General, excuse me. When you get those requirement figures, does that take out the ones that are in there? We have trucks in Fort Hood and most of the vehicles you have are held together with chewing gum and baling wire.

General SKIBBIE. We have a lot of trucks that are older than the drivers who are driving them.

Mr. LEATH. I am very much aware of that, I have ridden in a lot of them. In other words, when you say that we have 60, 70, 80, 90 percent of the requirement, have those been x-ed out?

General SKIBBIE. No. I am still including those overage schedules in the assets picture. We can give you a more precise answer, but we would then have to forecast how many of those would be washed out. Of course, we have 11 percent of them who are already overaged, and they are continuing to age as we go through that contract. I think they age, as I remember it, about 2 percent a year. So, we would have a couple thousand more that would have become overage.

But I have given you gross figures.

Mr. LEATH. I think you see what I am trying to establish.

General SKIBBIE. Yes, sir.

Mr. LEATH. Could you get your staff to sort of give me some figures on the forecast on each of these?

General SKIBBIE. Each one of these, the 10-ton, 5-ton, and five-quarter?

Mr. LEATH. That is right.

Genereal SKIBBIE. I will be happy to do that.

[The following information was received for the record:]

Following is the status of the 1¼-ton trucks, the 5-ton truck and the 10-ton truck, at the completion of the multi-year buys. Fiscal year 1985 is the final year of the multi-year buys on both the 5-ton and 10-ton trucks while fiscal year 1987 is the final year for the 1¼-ton trucks. the requirements shown are not full Army Acquisition Objectives (AAO). They are Force Package Level II, which has War Reserve requirements only through [deleted] as opposed to [deleted] in the AAO. The assets are shown two ways, with and without o' 'rage.

	1¼-ton trucks		5-ton truck		10-ton truck [2]	
	With 31,129 overage	Without overage	With 8,522 overage	Without overage	With (none) overage	Without overage
Requirement Assets [1] Short	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted]	[Deleted.]

[1] Includes assets of replaced vehicles-¼-ton Jeep, ½-ton Mule, 1¼-ton M880's and 1¼-ton Gama Goat's.
[2] Does not include the 10-ton tractor M123A1C, which is a separate distinct requirement.

Mr. LEATH. Also, when you have done that if you would, do a projection for me as to how much money it would take if there were additions in that period. You know, how much could we absorb effectively, how much further capability do we have perhaps in some of those contracts if the committee felt that ought to be accelerated.

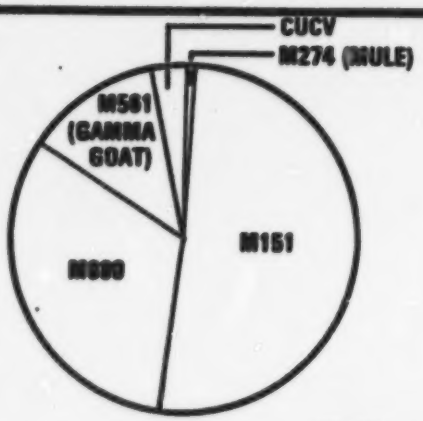
General SKIBBIE. In at least this 5 ton multiyear contract we have 100 percent option. And the 10 ton truck multiyear, we have 250 percent option.

So, we have that much surge capacity in those contracts.

Mr. LEATH. If you could just have that sent to my office. I would like to have it personally. You can submit it for the record if you want to.

General SKIBBIE. Yes, sir, I will be happy to.

HMMWV/CUCV ASSETS FY 82



TOTAL FLEET	99710
M151	51109
M880	32681
M274 (MULE)	752
M561 (GAMMA GOAT)	11932
CUCV	3236
HMMWV	0

Now, I would like to switch back to a pie chart for a minute here and talk about two programs together, high mobility multipurpose wheeled vehicle and the commercial utility and cargo vehicle.

We feel that we need to consider them together. At the direction of Congress the Army made a tactical wheeled vehicle fleet study to determine the most efficient and cost-effective combination of vehicle weight classes.

As a result of that study we determined that we could consolidate all of these types of high load tactical vehicles, these first four—the Jeep, the ¾ ton commercial vehicle, the ½-ton Mule, and the ¾ ton Gama Goat—into one weight class, basically one weight class ¾ ton and replace those with a version of the commercial utility and cargo vehicle or the high mobility multipurpose wheeled vehicle.

Now, what I would like to get across to you is that currently, right now, we have about 72 percent of our minimum or package II requirements, and more of half of that goes on Jeeps; about a third of them are the ¾ ton commercials, and about 12 percent are Gama Goats, articulated vehicle.

We now then intend to replace that light-load tactical fleet with this combination of vehicles, the CUCV and the HMMWV.

Now, before I leave this, I might point out again, we have not only a shortage status here, a shortage situation because we only have 72 percent of our vehicles, but of the Jeeps you have 39 percent of those that are already over the 12-year age; of the commercial ¾ tons, all of them, will soon be over their 7-year age; of the Gama Goats, all of them will soon be over their 14-year age.

So, we have a shortage situation and an overage situation.

Mr. HILLIS. Can I ask you a question about that? It appears to me—and this is just off the top of my head—but if you are going to

go and purchase this CUCV vehicle to do all those missions of the Jeep and the administrative vehicle, you have to have something that will do it all; is that not correct?

General SKIBBIE. What we are trying to do is design a vehicle here that will have the mobility characteristics and the ballistic protection that you require, and the off-road mobility that you require close to the frontlines, and then, as you move back from the frontlines and need those characteristics less, you will decrease the number of HMMWV's you have and increase the number of CUCV's you have.

Now, the CUCV is being acquired against a specific mission profile which includes some off-road operation; not anywhere near as much as the HMMWV does.

Mr. HILLIS. That one vehicle, that is a kind of administrative light vehicle?

General SKIBBIE. It is a commercially designed pick-up truck, but not an administrative vehicle.

Mr. HILLIS. The question I get at, the cost of procuring the CUCV has got to be many times what it would be to buy a light pick-up truck.

General SKIBBIE. No, sir, it will not. I was really surprised. This was my comparison marketer. He went out and he priced a ¾-ton vehicle. Let me see where I have it. He went out on the local market near here and he priced a ¾ ton diesel 4 wheel drive pick-up. They gave him a $1,200 discount. It did not include black-out lights, camouflage paint, 100-amp alternator or other heavy duty options required to adapt it to the tactical environment and it cost $12,700 in fiscal year 1983 dollars.

The comparable cost we expect to pay for the commercial utility and cargo vehicle is $12,274 in comparable dollars. So, what we are getting, I think, in the CUCV are economies of scale, in addition it is a beefed-up version of a commercial vehicle that can operate in a tactical environment.

So, what we did, we went out on a market survey. We said, "This is the type of vehicle we are interested in." We bought 26 vehicles in various payload classes. We then tested them over a standard course up at Aberdeen. We then kept track of what went wrong with them. We found that we needed their heavy-duty suspension system, for instance. We knew that we needed a heavy-duty electrical system and we knew we needed 200- and 100-amp alternators.

Cranking all these things in we came up with the specification that we now are on the street with for the commercial utility and cargo vehicle, and we have good competition.

Mr. HILLIS. That is 4-wheel drive?

General SKIBBIE. Yes, sir.

Mr. HILLIS. I am not quarreling with what you are saying.

General SKIBBIE. No, sir.

Mr. HILLIS. What I am saying is that when I go on these bases and I see the typical M-880 vehicle it is usually a light pick-up truck, a Dodge or Chevrolet. It is not 4-wheel drive. It is probably a production model that does not have all the features that you described in this which, I take it from your reporting that $13,000 figure, you are talking about a vehicle that is 4-wheel drive and say, diesel, and these special specifications.

General SKIBBIE. Yes, sir.

Mr. WILLIS. I think the typical 880 vehicle might be about half of that, of $7,000, or something like that.

General SKIBBIE. I only question whether you need that high usage vehicle to run around downtown Fort Knox or Fort Benning, and those places when we are paying a premium to get the uniformity.

General SKIBBIE. Yes, sir.

Mr. HILLIS. I think the typical 880 vehicle might be about half of that, or $7,000, or something like that.

General SKIBBIE. I think that point is well made. That has been one of our continuing problems and it is not that we are designing tactical vehicles into our force structure to use for the administrative purposes which you are referring to, but that we have been dramatically short of nontactical vehicles. When you do not have nontactical vehicles—which would be the light pick-up trucks, et cetera, that you need—you end up using the tactical vehicle.

So, when we are short nontactical vehicles the mission gets done, but it gets done in effect inefficiently as far as resources are concerned because you are pushed into using a tactical vehicle.

I would foresee that you would not see CUCV's driving around on administrative missions.

Mr. HILLIS. You are going to keep the M-880, is that correct?

General SKIBBIE. I will show you a chart here, we are going to wash it out of the system.

Mr. HILLIS. I am talking about, you are going to keep a light administrative vehicle.

General SKIBBIE. Yes, sir, but the M-880 is a nontactical vehicle. We will continue to buy nontactical vehicles for administrative use.

Mr. HILLIS. With not all of the——

General SKIBBIE. Without all of the heavy-duty requirements needed to adopt them to a tactical environment as in the case of CUCV.

Mr. HILLIS. That was the only question I wanted to raise.

General SKIBBIE. At the end I will show another pie chart like this. In 1987 you will see most of those Jeeps replaced by CUCV's and about a third of our force will be HMMWV's. That is not to way the HMMWV replaces M-880's, but that is going to be the ratio that we are going to end up with.

So, we are not replacing every Jeep with a HMMWV.

HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV); FISCAL YEAR 1983 RDTE REQUEST—$2.7 MILLION; FISCAL YEAR 1983 WPN SYS PROC REQUEST—$38.6 MILLION

[Dollars in millions]

	Fiscal year 1981 and prior	Fiscal year 1982	Fiscal year 1983	Fiscal year 1984	To complete	Total
RDT&E	$10.9	$3.0	$2.7			$16.6
Wpn sys proc			$38.6	$173.7	$982.5	$1,194.8
Quantity buy			1,180	6,193	33,395	40,768

Note.—High mobility, cross country tactical vehicle, complements CUCV program; fiscal year 1983—1st yr of 5-yr multiyear program; buy approximately 40,768, and none procured through fiscal year 1982 FDP.

The next chart, please. Now, I do not have a picture of a HMMWV because it really is still in competition. But what we are doing, we asked for a common chassis vehicle with three different body style—a utility body style, a weapons carrier body style, and an ambulance body style. But they will all use a common chassis and of course this is a tri-service program for the Army, the Marine Corps, and the Air Force.

I think I have already said quite a bit about the HMMWV, it does replace the Gama Goat, the articulated vehicle; it replaces the ½-ton Mule, and of course some Jeeps. But the Jeeps it is going to replace are those that are in the front lines now. For instance, we are going to use it for a TOW carrier. Right now you would have two Jeeps and one trailer for a TOW team.

When you get the HMMWV, you will only have one HMMWV to replace those three different vehicles. If you look at that on a cost basis that is an equal cost trade-off; plus, with the HMMWV you do have ballistic potection against mortars and artillery shrapnel.

Mr. Campbell.

Mr. CAMPBELL. But you are going to really replace all of your M-151's, are you not, with either CUCV's or HMMWV's; is that correct?

General SKIBBIE. At the end of the 5-year period we will still have M-151's in the system. Ultimately, that is our objective. But with the resources we have devoted to them over the 5-year program that we have right now, 1983 through 1987, approximately 25 percent of our light-load fleet will still be Jeeps in 1987.

Mr. CAMPBELL. Why would you replace a $15,000 Jeep with a $32,000 HMMWV?

General SKIBBIE. I think that is the question that is constantly raised, and I think it is a good question.

First of all, we found that those Jeeps do not really meet our operational mission requirements that they are called to do right now. It is a World War II vehicle. Yesterday, in preparing for the hearing someone said, "When did the Jeep start?" and somebody said, "Well, it was to replace the horse."

I do not think it is that extreme but it is a World War II vehicle that has stayed with us and given us good service. However, as we progressed in other areas of warfare we have also added to our equipment. So, we have a lot of radio equipment that goes with various command units; we have the TOW missile that you want to mount on a vehicle.

Mr. CAMPBELL. Well, you mount the TOW on a Jeep today.

General SKIBBIE. Pardon?

Mr. CAMPBELL. You have to TOW mounted on your Jeep today.

General SKIBBIE. That is right, but to make a TOW team it takes two Jeeps and a trailer. That comes to approximately the cost of a HMMWV in the weapons carrier version and you do not have the ballistic protrection that you will have with the HMMWV the weapons carrier version. Plus, you simply do not have the mobility and you do not have the cross country acceleration and agility required to make it operationally effective.

But I would emphasize, we are not putting HMMV's into areas where you do not need its special capabilities and characteristics. You are going to put it close to the front lines, you are going to put

it perhaps in a rear security role where you want to have some mobility and mount a machine gun in case there is an air drop behind your lines. You may use it to carry a Stinger. But where you do not need its special characteristics you are not going to use a HMMWV, you are going to end up using a CUCV, and here are the competitors.

COMMERCIAL UTILITY AND CARGO VEHICLE (CUCV); FISCAL YEAR 1983 WPN SYS PROC REQUEST $183.4 MILLION

[Dollars in millions]

	Fiscal year 1981 and prior	Fiscal year—			To complete	Total
		1982	1983	1984		
WPN sys proc		$39.8	$183.4	$305.3	$134.7	$663.2
Quantity buy		3,236	13,425	22,875	10,033	49,569

Note. A commercial utility vehicle to replace aging jeeps and commercial M880 series vehicles; complements HMMWV program; fiscal yr. 1983—2d yr. of a 4-year multiyear contract; buy approximately 49,000; and 3,236 procured through fiscal year 1982 FDP.

Now, Chrysler has now dropped out of the competition but you still have General Motors and American Motors as competitors for the commercial utility, and cargo vehicle. Now, the CUCV program also responds to congressional direction to commercialize 20 percent—at least 20 percent—of our ¼ ton fleet. We are going to end up commercializing much more than 20 percent of our light-load fleet.

Mr. LEATH. Why did Chrysler drop out?

General SKIBBIE. They felt that they had a problem providing an engine. We want a diesel engine here so that it is common with our 10 tons, 5 tons, 2½ tons, and 62 HMMWV's. We are trying to "dieselize" our entire tactical fleet so that we can cut gasoline out of the bulk supply system in the tactical area.

As I mentioned, at the end of the 5-year period about half of our light-load fleet will be CUCV's, and of course it is going to replace Jeeps and the current five-quarter ton commercial trucks.

MATERIAL HANDLING EQUIPMENT

Fiscal year 1983 WPN sys proc request $50.3 million.—Initiates standardization program in fiscal year 1982; M.H.E. essential for ammunition handling, support of RDFJTF, and logistics over the shore operations; and directly increases readiness of terminal transfer and ammunition units.

CONSTRUCTION EQUIPMENT

Fiscal year 1983 WPN sys proc request $79.8 million.—Provides commercial construction equipment for combat engineers; fills shortage and meets over-age problem; major standardization thrust, 8 items combat engineer construction equipment; standardization prog uses competitive fixed price, multi-year contracts; and for 8 pieces of equipment directly improves readiness, reduces support cost.

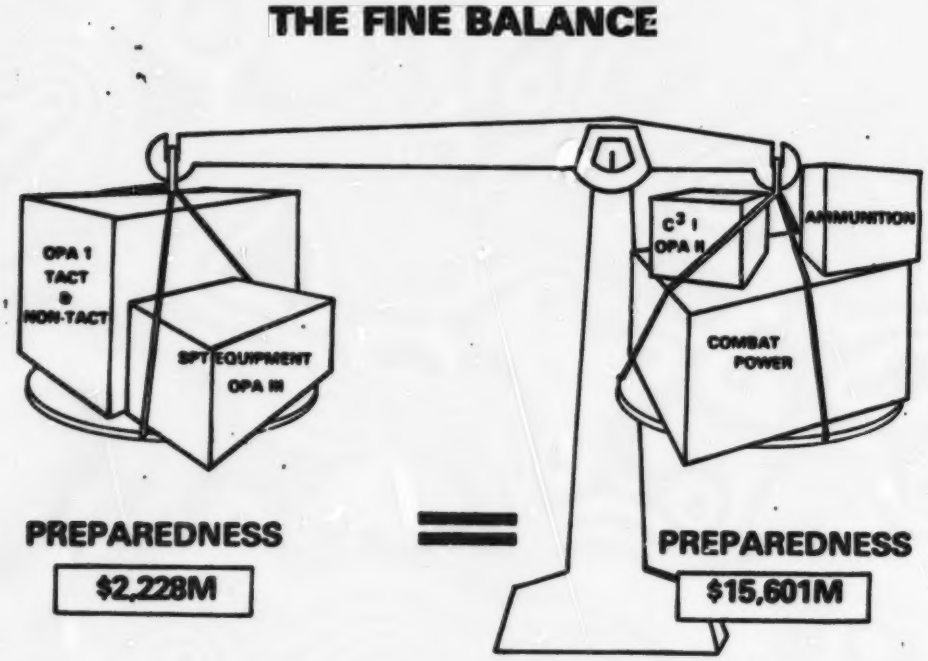
I am going to switch away from vehicles per se and have two slides here on construction equipment, and then give my cohorts in crime a chance to say something.

As I mentioned, we have about 58 percent of our requirement, about half of that is over age. We have a 7½-ton crane here, a front scoop loader and a grader shown here. Not a large amount of money requested this year although this continues the standardization of construction equipment.

We have eight different items of construction equipment that we are going to procure in the initial standardization effort. For each one of those items, the Army will have a competitive multiyear fixed price contract so that we can procure all the same graders from a single manufacturer, the same with scoop loaders, the same with cranes, and so forth. Not all of this will be procured from the same manufacturer but they will be similar so the Army can have ease of training for its mechanics and reduce the logistical burden.

The final slide would be materials handling equipment. Again, we have about three-quarters of what we require, almost half of that is overage. Of course, this is a very essential item, particularly critical in the ammunition area. That has been one of our concerns to improve our materials handling equipment situation with regard to ammunition handling.

Now, we have about $17.8 billion in the Army procurement request. As I mentioned as I began, the essence of combat is to move, shoot, and communicate. You basically move, shoot, and communicate with tanks, guns, aircraft and missiles, ammunition, radios and electronics. That constitutes about $15.6 billion.



Now, what I talked to you about today is a portion of this side of the scale here. What I am trying to depict is that there is a great amount of leverage. We have a relatively small part of the total procurement and yet, without these items which sustain and are those "Sinews of Support" you cannot make these elements of combat power work.

I am ready for your questions, sir.

Mr. STRATTON. Thank you, General.

I understand what you have been saying about how to calculate the useful life of a vehicle based on design technology and mileage. But without considering the average cost of maintaining a vehicle and the conditions under which the vehicle has to be used, how can you say that it is economically desirable to replace vehicles because they have outlived their usefulness?

General SKIBBIE. Well, we based useful life originally on a design philosophy. We told the designers that we want a design for a particular age span. Then, as it enters the system, we then look at it at that age span to determine, can we extend the life and in the case of the 5-ton truck we extended it from, I believe, 15 years to 20 years as a result of that sampling. In the case of the ¼-ton truck or the Jeep, we extended it to 12 years and I think originally it was 8 years.

So, I think we are pragmatic about it. We design against a certain life span and then, where experience indicates that we can extend the life, we do.

Mr. STRATTON. Well, should we not conduct some kind of an analysis to identify the point of diminishing returns when we expend money to replace a vehicle?

General SKIBBIE. We are doing that, sir. We are evaluating the procedure. Perhaps we extended it too long because, as you so correctly point out, you really want to look at the total cost and that includes the repair parts, the labor that goes into repairing a vehicle. Even though you may be able to keep a vehicle going with chewing gum and baling wire, perhaps it passes some point at which it becomes uneconomic. We have an on-going study to do that, to do exactly that.

We did consider total life-cycle costs to the best of our ability to calculate it in the tactical wheeled vehicle fleet study, and that included the number of operators, the estimated amounts spent on repair, as well as the initial procurement cost.

Mr. STRATTON. When are you likely to complete that study?

General SKIBBIE. We are not certain. It won't be done this year.

Mr. STRATTON. But not before we mark up our bill.

General SKIBBIE. No, sir. But even if our vehicles were not overage, we are short.

Mr. STRATTON. Any other questions?

Mr. LEATH. No, Mr. Chairman.

WRITTEN STATEMENT OF BRIG. GEN. LAWRENCE F. SKIBBIE, JR.

Mr. Chairman and members of the committee, it is a pleasure to appear before you today to outline for you the Army's tactical and support vehicle, other support equipment, and ammunition programs. Our chief of staff has termed these important areas "Sinews of support," for without trucks, trailers, engineer and materiel-handling equipment, other elements of support equipment and ammunition the combat forces just could not function. These items are of vital importance to the Army. And along with others which I'll discuss momentarily, are included in the Army's other procurement appropriation with the exception of ammunition, a separate appropriation, which I'll discuss last. As the OPA title implies, and as you will see, this equipment from the other procurement Army appropriation is other than tanks, aircraft, missiles, and ammunition—the visible, impressive, and conventional hardware. I don't think it begs the issue to say that equipment fom this appropriation constitutes the nail, the shoe, and in some cases the horse, for the want of which a kingdom was lost, to paraphrase that old truism. Tactical and support vehicles and other support equipment constitute the crtitical link in the readiness and preparedness chain. Overall, tactical and support vehicles and other support equip-

ment consists of 49 percent of the other procurement, Army appropriation and consists of about 75 different categories of equipment in the 1983 budget, exclusive of communications electronics, which will be discussed this afternoon. None of these items fly, shoot, or explode. But without them, the tanks, guns, missiles, aircraft, and combat forces themselves won't operate for long.

However, as requested by your staff, this morning I will focus my later remarks on certain key tactical and support vehicles and vehicular items of other support equipment. The Army's requirement for transportation is of considerable magnitude. Weapons require ammunition, fuel, and repair parts; the soldiers who man these weapons must be supported; replacement stocks and reserve equipment must be brought forward; damaged equipment must be evacuated; and a long series of logistics actions must be accomplished to sustain and maintain our forces in a combat-ready status. One division and its supporting slice in 1 day of combat can be expected to consume approximately 2,700 tons of ammunition, 180,000 gallons of fuel, 50 tons of rations, and 111 tons of other kind and classes of supplies. Now it takes about 800–1,000 trucks and trailers to move these supplies into the division area, and this 800–1,000 does not include the additional approximately 5,000 ¾-, 2½-, 5-, and 10-ton trucks, tractors, and trailers actually organic to the division. Now if you extend the truck requirements to the total 24-division Army, and then include other force elements, such as separate brigades and regiments, transportation, training, and support groups, as well as war reserves, the magnitude of our requirement can be appreciated.

In October 1980, we submitted to Congress our tactical wheeled vehicle fleet requirements study, which assessed the Army's overall vehicle requirements and defined our chosen fleet. This chosen fleet deletes the ¼-ton M151 Jeep, ½-ton M274 Mule, ¾-ton M561 Gama Goat, ¾-ton M880 series commercial truck and the 8-ton Goer. It retains the ¾-, 2½-, 5-, and 10-ton vehicles as well as selected linehaul and equipment transporters. This fleet reduces the types of vheicles while maintaining our overall combat effectiveness and readiness. We have moved in a deliberate and positive manner to implement the findings of the study in fiscal year 1981 and 1982, and the fiscal year 1983 budget request reflects the Army's continuing commitment to the process of upgrading our fleet.

I will address individually key vehicle programs which we are emphasizing this year.

In 1981, fixed price 5-year, multiyear contracts were signed for 5- and 10-ton trucks, a 2-year, multiyear contract was signed for linehaul cargo trucks, and in a few months, we anticipate a contract award initiating the commercial utility and cargo vehicle program (CUCV). The CUCV is complementary to the high mobility multipurpose wheeled vehicle (HMMWV) program in which we plan to award a contract during the first quarter of fiscal year 1983. The CUCV and HMMWV are two complementary vehicle families which implement our strategy for consolidating the ¾-ton fleet.

In addition to these more visible tactical truck programs, we also have important program initiatives in nontactical vehicles as well as some smaller programs such as the Small Unit Support Vehicle (SUSV) and several trailer programs. Tactical and support vehicles comprise 56 percent of the tactical and support vehicles and other support equipment portion of the other procurement, Army appropriation, and the 5-ton, 10-ton, and 5/4-ton truck programs themselves account for a majority of that effort.

Of some concern to us is the overage status of our fleet. The original life expectancy estimates for our tactical trucks were made during the development phase of the life cycle based on expected usage and design technology. Subsequently, the Army Materiel Systems Analysis Agency (AMSAA) performed useful life studies for tactical trucks (¼-ton, 2½-ton, 5-ton), based on mileage extrapolation rather than age and used sample sizes of vehicles which had not yet reached their predicted life expectancy. Based on the AMSAA studies, the useful lives of the ¼-ton, 2½-ton, and 5-ton truck systems were exended as follows: ¼-ton—from 7 years to 12 years; 2½-ton—from 12 years to 15 years; and 5-ton—from 15 years to 20 years. The Army is studying a means to more fully develop economic justification for the useful life of tactical vehicles. We do know now that within the current vehicle life expectancies that bodies rust out, rubber rots and deteriorates, certain vehicle components and spare parts are difficult to buy, and in many cases, we must take extraordinary efforts to keep the older vehicles in our fleet operational. And while we have not tied these life expectancies to economic breakpoints, our experience with our older vehicles causes us concern about going into combat with vehicles that are of such extended age. Should we extend the lives even further we may simply be creating a bow wave of such size that it will wash over us at some future point.

Our nontactical fleet procurement comprises about 4 percent of the vehicles and support equipment procurement. Regarding our nontactical fleet, maintenance and service vehicles, carryalls, garbage and dump trucks, sedans, et cetra—due to the relatively low priority accorded to procurement of these vehicles over the last few years relative to other requirements, this fleet is a problem. The DOD standards of life and mileage criteria have been exceeded in many cases, and commercial vehicles with over a 100,000 miles are not uncommon. While it may be both practical and possible for a private individual to own and operate a vehicle 7–10 years old with over 100,000 miles, the same is less true of a large fleet operator such as the Army. These vehicles just weren't built to last like this, and we pay with higher downtimes, increased costs, and diversion of the tactical fleet tc meet urgent administrative nontactical requirements.

It is particularly important to point out that our procurements in many cases do not replace overage vehicles in our tactical fleet at this time since we are short of our requirements and must keep many of these vehicles on hand until we have sufficient vehicles to replace them.

Equally important within the other procurement Army, account are five other major combat support mission areas. These are included in the other support equipment portion of other procurement, Army. They are combat engineer and support equipment, supply support equipment, medical support equipment, maintenance support equipment, and transportation support equipment. The other support category provides broad support across many lines. Preparedness in each of these mission areas is essential if the combat force is going to operate and be sustained. In most instances the equipment being bought in fiscal year 1983 partially fills existing shortages towards the Army acquisition objective.

The combat engineer and support equipment area represents 9.5 percent of the tactical and support vehicles and other support equipment portion of the OPA budget, which I will refer to hereafter as OPA I and III. Of major significance is the construction function. Fiscal year 1983 procurements represent the second year of a standardization effort to fill existing shortages and replace overage equipment for 8 major combat construction items.

This standardization effort utilizes separate competitive multiyear contracts to purchase a single commercial item for each of the 8 major pieces of equipment. When standardization is completed, it will significantly increase the readiness of our combat engineer units. The generator program procures seven different types of generators in support of fielding major systems such as Patriot plus existing shortages in currently fielded equipment. The mine/countermine program is significant in that our current equipment is World War II vintage. Procurement of both the mine roller and ground-emplaced mine scattering system (GEMSS) partially fills initial shortages and provides significant improvement over current methods in supporting the combat force.

The supply support equipment, representing 12.4 percent of the OPA I and III budget, supports 5 functional areas; the chemical defense program buys badly needed protective equipment, chemical alarms and detectors, and decontamination equipment that will increase the combat units' ability to operate in a chemical environment. The materiel-handling function increases the preparedness of moving ammunition and other supplies rapidly. It supports the combat force whether it be at fixed locations or in support of the Rapid Deployment Force being supported by logistics-over-the-shore (LOTS). Ammunition alone cannot support the combat soldier, It takes the forklifts to move the ammunition onto and off trucks and railcars. Water purification and distribution equipment is necessary to enable our combat forces to fight in a desert environment. With combat equipment comes the always necessary requirement to store, issue, and distribute petroleum, which is an essential part of OPA procurement.

In addition to trucks, it must be emphasized that watercraft, rail, and the containerization program are essential in moving the combat troops, combat equipment, and their supplies from home station to the point of debarkation from CONUS and finally to the point of embarkation on a foreign shore. Air assets are insufficient to move the total tonnage requirements; thus, watercraft must ferry the combat contingent to shore from their deep-draft ships. The Army is the executive agent for the defense rail interchange fleet, and thus procures the limited assets necessary to move requirements and meet necessary mobilization requirements which can't be met by the current commercial rail fleet through leasing agreements. The transportation support items represent 3 percent of the combined OPA I and III budget.

Medical support equipment represents 5 percent of the OPA budget and supports both the tactical and the installation medical facilities worldwide. The combat zone hospital represents the tactical shelters, tentage, and environmental control system

(power and air filtration) which can be configured accordingly to meet the size of hospital required. In accordance with Congressional guidance, all military services use the basic structural building blocks. Combat support medical equipment funding procures the equipment which goes inside the tactical hospital structures. Finally, the medical support equipment funds the installation facilities worldwide.

OPA also supports equipment for the everyday Army during peacetime, 11 percent of the combined OPA I and III budget supports this effort. Base commercial equipment follows Congressional guidance to use procurement funds for investment-type items required by commands to do their peacetime mission. Training is an essential part of preparedness, and thus the national training center equipment and training devices are essential to the combat soldiers if they are to be proficient in their military specialties.

Additionally, Mr. Chairman, the fiscal year 1983 budget contains $2,639 million for procurement of ammunition hardware and support of the ammunition production base. This budget is based upon a force packaging methodology which emphasizes support for forward deployed and early deploying follow-on forces and provides a balanced trade-off between high-payoff training needs and war reserve requirements. The Army continues to emphasize buildup of war reserve inventories to support contingency and war plans and maintenance of the active base until mobilization actions energize and expand the total base for providing the necessary sustained support. Measured in consumption days of supply, this budget will add significantly to our stockpile of modern munitions.

The $2,205.6 million requested in fiscal year 1983 for ammunition hardware provides for worldwide training consumption, losses to inventory through the fiscal year 1983 funded delivery period, procurement of modern hardware, and buildup of war reserve stocks toward the U.S. authorized acquisition objectives.

The following shows distribution of fiscal year 1983 ammunition hardware by category and type:

Fiscal Year 1983 ammunition hardware request, by category

	Millions
Training unique	$524.5
Training standard	233.1
War reserve	1,387.5
Nonhardware	60.5
Total	2,205.6

By type of ammunition

Tank ammunition (10 pct)	$219.0
Fuzes (5 pct)	108.0
Artillery anmmunition (37 pct)	818.2
Small arms ammunition (23 pct)	502.7
Mortar ammunition (5 pct)	106.9
Atomic materiel (1 pct)	22.6
Propelling charges (4 pct)	89.9
Rockets (8 pct)	178.8
Other (4 pct)	99.0
Nonhardware (3 pct)	60.5
Total	2,205.6

Tank ammunition.—Funds totaling $219.0 million are being requested for tank ammunition, in support of training requirements and war reserve buildup.

Tank ammunition

Cartridge:	*Millions*
105mm, TP-T (target practice-tracer) (T)	$53.3
105mm, DS-TP (discarding Sabot-target practice (T)	85.5
105mm, APFSDS-T (WR)	69.3
120mm, HEAT-MP-T (WR)	2.3
120mm, TP-T (T)	2.4

TPDS-T (T)	3.4
120mm, APFSDS-T (WR)	2.8
Total	219.0

(T) Training ammunition (144.6).
(WR) War reserve (74.4).

The funds associated with 105mm tank training and war reserve ammunition requirements are for rounds fired from the main gun cannon mounted on tank models M1, M60, M60A1. M60A2, M60A3, and M58A5. The budget includes the initial buy of 120mm ammunition for the German 120mm gun system ont the M1 Abrams tank. The training rounds are needed to support annual tank qualification/familarization firing. The funds for war reserve purcahse 105mm and 120mm armor-piercing, FIN-stabilized, discardiang Sabot with tracer (APFSDS-T) and 120mm high-explosive antitank multipurpose with tracer (heat-MP-T) ammunition. The APFSDW-T cartridges, which have increased capability and reliability, will replace the older version of armor-piercing, discarding-Sabot ammunition. Both APFSDS and heat rounds are intended for use against armor targets.

Fuzes.—$108 million is requested to support three different types of fuzes for artillery projectiles.

Fuzes

Fuze:	*Millions*
Proximity	$47.2
Point detonating	9.4
Mechanical time	51.4
Total	108.0

The proximity, point detonating, and mechanical time fuzes are required to balance with on-hand projectile assets at the end of the fiscal year 1983 funded delivery period. Proximity and PD fuzes are required for use with 105mm, 155mm, 175mm, and 8-inch projectiles. The mechanical time fuze program supports inventories and planned procurement programs of the new ICM/ADAM/RAAMS (improved conventional munition/area denial artillery munition/remote antiarmor mine system) family of munitions.

Artillery ammunition.—The $818.2 million requested constitutes 37 percent of the total ammunition hardware program we propose.

These funds will support war reserve buildup for new modernized artillery ammunition and training.

War reserve artillery ammunition

Projectile:	*Millions*
155mm, HE	$18.5
155mm, HE, ICM, (DP)	237.3
155mm, HE, RAP	17.7
155mm, HE, ADAM	57.9
155mm, HE, RAAMS	98.6
155mm, HE, Copperhead	183.6
155mm, WP, smoke screening	16.1
8-in., HE, ICM (DP)	104.2
8-in., HE RAP	44.9
Chemical munitions	18.4
Total	797.2

The projectile, 155mm, HE, ICM, DP (high explosive, improved conventional munition, dual-purpose), at $237.3 million and the 8-inch version, at $104.2 million, account for 42 percent of the funding requested for artillery ammunition. These are the new improved rounds used against personnel, vehicles, and light armor.

$17.7 million is requested for the projectile, 155mm RAP, and $44.9 million for the 8-inch HE RAP. The RAP (rocket-assisted projected) is a high-explosive round with a rocket motor attached to the projectile base. This rocket assist extends range capability, yet the base of operation common to conventional artillery munitions is maintained.

We are requesting $57.9 million for the 155mm HE ADAM (area denial artillery munition), and $98.6 million for the projectile, 155mm, HE, RAMS, (remote antiarmor mine system).

$183.6 million is requested for projectile, 155, HE, Copperhead, which has a laser terminal homing capability. All of these 155mm projectiles are fired from the M109A1, A2, A3, and M198 howitzers.

Artillery training ammunition

	Millions
Cartridge, 14.5mm	$1.8
Projectile, 155mm, training	19.2
Total	21.0

The 14.5mm training cartridge is fired from the M31 field artillery trainer which, in turn, is mounted in 105mm, 155mm, and 8-inch howitzers and provides an inexpensive, subcaliber, live-fire training method for artillery forward observers, fire direction personnel, and gunners.

The projectile 155mm training round is a heavy-wall, hollow-core, forged-steel sheel designed for low-cost artillery firing/forward observer training with the 155mm family of howitzers.

Small arms ammunition.—This category totals $502.7 million.

Small arms ammunition

	Millions
Cartridge:	
5.56mm, all types	$70.0
7.62, all types	52.7
Caliber .22, all types	1.2
Caliber .45, all types	4.6
Limited range/plastic ammunition, all types	10.6
Cartridge:	
Caliber .50 all types	93.6
20mm, all types	21.1
30mm, ADEN/DEFA, all types	64.1
25mm, Bushmaster, all types	103.8
40mm, Divads, all types	70.9
40mm, conventional, all types	10.1
Total	502.7

Divad gun, 30mm ADEN/DEFA, and 5.56mm saws ammunition warrant discussion as the fiscal year 1983 program includes the first full year of production of these new types of munitions, initially procured in fiscal year 1982.

Divad gun ammunition funding supports production of three types of ammunition. The high-explosive round point-detonating (PD) fuzed cartridge functions when the projectile impacts the target. It is used to defeat fixed-wing aircraft, helicopters, and lightly armored ground targets. The high-explosive proximity fuzed round is a similar cartridge which functions without impact on target. The TP round is a target practice (TP) cartridge and has a completely inert projectile. The cartridge and projectile weights, launch velocity, and time of flight are equal to those of the HE rounds. The TP round is used to train troops.

30mm ADEN/DEFA funding supports production of two new types of ammunition. The HE-DP is an electric-primed, aluminum-cased, fuzed, high-explosive, dual-purpose cartridge for use in the XM230 weapon system. The weapon is used as the secondary armament system on the YAH-64 advanced attack helicopter. The TP-T round is a target practice cartridge used strictly in support of training requirements.

The 5.56mm ball and tracer (SAW) funding supports a ball round which has a steel conical insert in the ogive of the bullet which results in an increased helmet penetration range. The tracer has a longer tracer column and improved pyrotechnic mixture which results in a longer daylight trace time. The rounds are linked to a 4-to-1 mix. They will be used in the squad automatic weapon system (SAWS), which is a lightweight, linked belt-feed, one-man-operated weapon. A 5.56mm blank round linked for the saw is also included.

Mortar ammunition.—Funds of $106.9 million are requested in support of war service and training requirements of six types of mortar ammunition.

Mortar ammunition

	Millions
Cartridge:	
4.2 in. high explosive	$24.1
4.2 in. illuminating	31.2

	Millions
81mm, illuminating	14.9
81mm, practice, training	10.7
60mm, HE, lightweight company mortar system	21.6
60mm, HE/gutted	4.4
Total	106.9

Procurement of 4.2 in. mortar ammunition is for high-explosive and illuminating rounds used in the M30 mortar. Funding supports both war reserve and training requirements.

Procurements of the 60mm mortar ammunition is for the high-explosive cartridge which is loaded with comp B; includes 4 horseshoe increments; includes a waterproofed propellant system; is fuzed with a multioption fuze; and is fired from the M224 lightweight company mortar system.

Planned procurement of the standard 81mm cartridge is for the illumination rounds used in the M1 and M39 mortars, and the subcaliber training rounds.

Atomic materiel.—Funds of $22.6 million requested provide for three elements: nuclear weapons support materiel and production of DOD components for 8-inch and 155mm nuclear munitions.

Charges.—Funds of $89.9 million are requested for 155mm and 8-inch propelling charges in support of war reserve buildup requirements and training.

Propelling charges

Charge:	Million
Prop, 155mm, green bag	$45.3
Prop, 8-inch, white bag	44.6
Total	89.9

The 155mm green bag charge is the short-range charge. The 8-inch WB line supports the M188E1 charge. The M188E1 separate loading propelling charge provides extended range in the M110A1 self-propelled howitzer.

Rockets.—Funds of $178.8 million are being requested in support of training and war reserve requirements for the Viper and the Viper training rounds and 2.75-inch rockets.

Rockets

	Millions
Viper	$107.4
Viper, tracer bullet, trainer	6.3
Rocket, 2.75-in, LSFFAR, all types	65.1
Total	178.8

The Viper rocket and Viper tracer bullet trainer ammunition replace the old standard 66mm light antitank weapon (LAW) and 35mm LAW training ammunition. This is the third year of production for these new munitions.

Funding requested in fiscal year 1983 for rocket 2.75-inch LSFFAR all type support three types of 2.75-inch munitions. High-explosive (HE) rocket has a 10-pound warhead and a point detonating fuze; the multipurpose submunitions (MPSM) rocket provides lethality against personnel, materiel, and armored targets, with a manyfold increase in antipersonnel effectiveness and in hit probability, and the MPSM practice rocket. The MPSM round also includes a remote-set fuze allowing in-flight capability to vary the standoff range.

Other.—A sum of $99.0 million is requested for various types of munitions in support of training and war reserve buildup requirements.

Other ammunition

	Millions
Ground-emplaced mine scattering system (GEMSS)	$29.2
Hand grenades, all type	12.5
9th ID high technology test BED ammo	.5
Total	99.0

The ground-emplaced mine scattering system, at $29.2 million, constitutes 29 percent of the funds being requested.

Nonhardware.—In the last category is $60.5 million identified as nonhardware.

Nonhardware

	Millions
Components for special tests	$1.8
Components for renovation	32.0
Components for prove-out	22.9
Spares and repair parts	1.1
Weapon components in support of ammunition proof and acceptance testing	1.8
Malfunction investigation	.9
Total	60.5

Two line items, components for renovation, $32.0 million, and components for prove-out, $22.9 million, are the major programs in this category.

Components for renovation funding provides for procurement of ammunition components required for use in renovation of unserviceable assets currently in inventory.

Components for prove-out funding provided for confirmation and acceptance of prior year production base modernization and expansion projects to ensure that: (1) the manufacturer is capable of producing an acceptable end product, (2) the manufacturer's warranties are met, and (3) the facility is capable of producing at the design rate specified.

ACTIVITY 2: AMMUNITION PRODUCTION BASE SUPPORT

The ammunition production base fiscal year 1983 program of $433.4 million has as its principal thrust the continuation of a balance with prior year initiatives. In accordance with Department of Defense guidance, the Army is emphasizing procurement of war reserve stocks and financing only those production base projects needed to meet peacetime production requirements. The following summarizes our ammunition production base request:

	Millions
Provision of industrial facilities	$391.8
Layaway of industrial facilities	17.2
Manufacturing technology program	24.4
Total	433.4

The fiscal year 1983 budget includes $33.6 million to support production and replace equipment at 16 active ammuntion production plants and three production-related facilities.

A total of $358.2 million is requested for initial production facilities and modernization and expansion projects, which establish the production base capability to produce the new and more effective modernized ammunition items. New production capability is being established or expanded for 105/120mm tank ammunition; for GATOR and GEMSS, members of the family of scatterable munitions (FASCAM); the L8A1 red phosphorus smoke grenade and 2.75-inch rocket. These projects are needed to permit the introduction of these modernized items into the DOD inventory with the resultant increase in the readiness and effectiveness of our combat forces.

Another part of the fiscal year 1983 program is the continuation and balance with prior year initiatives. A total of $15.8 million is requested to complete the Mississippi Army ammunition plant at Bay St. Louis, Miss. This provides additional funding to accommodate unforeseen cost increases, changes, and inflation in the project. Mississippi AAP, when complete, will be capable of producing 120,000 rounds per month of the 155mm, M483 improved conventional munition (ICM). Also continuing prior year initiatives are the restoration of the ammonia oxidation plant at Sunflower AAP and expansion of the initial production facilities for the antiarmor cluster munitions and tactical munitions dispenser metal parts. In the area of new initiatives, seven projects totaling $121.1 million provide facilities for the core, projectile metal parts, cartridge case, stub base, load, assemble, and pack for 105/120mm tank ammunition. Two FASCAM projects totaling $17.3 million provide facilities for manufacturing extended tripline sensors and the battery.

The $17.2 million requested for layaway is for the protection and preservation of equipment and facilities no longer required for active production, but which must be retained for future peacetime or mobilization production.

The $24.4 million for manufacturing methods and technology (MM&T) is associated with the modernization and expansion program. This program improves ongoing production processes to achieve cost reductions and enhanced health, safety, and

energy conservation characteristics. Additionally, this program develops production processes incorporating the latest state-of-the-art technology from private industry to mass-produce the new, more sophisticated munitions.

We believe that we have a balanced program and solicit your support in this budget.

Returning to a discussion of trucks, Mr. Chairman, following me today are Admiral Jones of the Navy, Brigadier General Carson of the Marine Corps, and Major General Bowden of the Air Force. While they will each address their own tactical and support vehicles programs, it is important to recognize that the missions and operational roles of the four services dictate the manner in which vehicles are used and the kind of vehicles required. The Army and Marine Corps, being more similar, orient more on tactical vehicles, whereas the Navy and Air Force, operating out of air and naval bases and installations, equip themselves accordingly. I would now like to address selected tactical and support equipment programs in our fiscal year 1983 budget.

Mr. STRATTON. All right, we will go on to Admiral Jones.

STATEMENT OF REAR ADM. J. P. JONES, VICE COMMANDER, NAVAL FACILITIES ENGINEERING COMMAND, DEPARTMENT OF THE NAVY

Admiral JONES. Good morning, Mr. Chairman.

Sir, I have submitted for the record my prepared statement. I have also submitted for the record this morning the statement of Rear Admiral Pomponio and that is on Ammunition Procurement because I understand that the hearing on Ammunition Procurement scheduled for tomorrow has been canceled.

Mr. STRATTON. That is right, yes.

Admiral JONES. I would like to briefly go through the introduction to my prepared statement and then follow that with a brief slide presentation if I have your permission, sir.

Mr. STRATTON. Yes, without objection, you may proceed. Your statement will be included in the record.

Admiral JONES. It is a pleasure for me to appear before you to support the Navy's fiscal 1983 budget request for civil engineering support and supply support equipment. The Naval Facilities Engineering Command, of which I am a member, is the Navy's manager for civil engineering support equipment; the Naval Supply Systems Command is the Navy's manager for materials handling equipment.

For the purposes of my presentation this morning I have rolled these two programs together, that is the civil engineer support equipment and the materials handling equipment—Budget Activities 5 and 6—into one presentation. But I will limit my discussion to the automotive construction and materials handling equipment, that is to say, the rolling stock such as trucks, passenger-carrying vehicles, earth moving equipment, concrete mixers, forklift trucks, and other materials handling equipment.

These two programs do include some other types of equipment that I am not addressing today, such as fleet moorings, pollution control equipment, and some automated material handling systems that go into warehouses.

In contrast to the programs that were addressed previously by the General, almost everything I am talking about, sir, is commercial equipment, nontactical. We do have a few of the "M" series tactical equipments in the 1983 program but by and large we are

talking about commercial equipment that gives us the logistics support we need.

The automotive and construction equipment supports both shore activities and the operating forces, principally Seabees; and materials handling equipment is used aboard ship as well.

The equipment proposed for procurement in fiscal year 1983 will fill some critical inventory shortages but by and large the bulk of it goes to replace overage equipment.

The viewgraph presentation which follows gives a brief overview of how we determine our requirements, what our inventory objectives are, what those inventory objectives look like as compared to our requested 1983 budget, and our proposed 1984 budget; what our overage posture is, and how the 1983 and 1984 procurements will affect the overage posture. Finally, a display, pie chart display, of procurement agents that we use to execute our acquisition program.

Although the details may vary somewhat for civil engineering support equipment and materials handling equipment, the allowances for those equipment items are determined annually at the activity level where the activity justifies what their allowance should be. That allowance is then submitted up through the chain of command to the Office of the Chief of Naval Operations and ultimately approved by the CNO. That, then, becomes our approved inventory objective.

Annual budget requirements are based on those approved allowances. Procurements are planned to fill critical shortfalls and to replace overage inventory. Those procurement plans are then prioritized by activity by each piece of equipment, by age, mileage, operating hours, condition of equipment, impact on the mission. Then those procurement plans are consolidated by major commands and within the total program funding limits the most important of those procurements are included in the budget request.

I divided the equipments that I am going to talk about this morning into three major categories, sir, as highlighted on the left. Automotive equipment, construction equipment, and materials handling equipment. And without going to the many numbers that are in there I will tell you also that I have rolled up many budget line items into each of those three categories. We will discuss those three categories separately in following slides.

The bottom line is our current total inventory objectives for those three categories of equipment, some 70,450 vehicles or pieces of equipment worth $1.6 billion. Our fiscal year 1983 procurement is planned at $91 million, it would buy 3,850 items of equipment or about 5.5 percent of the total inventory objective.

I would add at this point that our total inventory today is just over 68,000 units. That represents about 97 percent of our total inventory objective.

So, from an inventory standpoint we are in pretty good shape. As you will see in the following slides, we are not nearly in such good shape from an overage standpoint.

The next three charts do show the impact of the requested 1983 budget and the proposed 1984 budget on the overage posture in each of those three categories.

This slide is the automotive equipment, that is passenger-carrying vehicles, trucks, and trailers. The overage status for automotive vehicles in the operating forces at the end of the 1982 procurement would be 47.5 percent of the inventory. It remains the same through 1983. There is some improvement with our proposed program in 1984, and then there would be additional improvements in the outyears.

On the shore activity side we continue to age through 1984, but there are programing initiatives under way in the Office of the Chief of Naval Operations to make the resource sponsors for the various naval activities more aware of the cost of ownership, and I believe that we will see improvement and a reversal of that trend in the shore establishment in the outyears.

Mr. STRATTON. Admiral, we are talking about standardization and interoperability with our allies. During World War II we had the interoperability between the services. The Jeep, for example, was a standard vehicle for the use of the Navy ashore. The Army is now going to a HMMWV. Does that mean that the Navy will go the HMMWV?

Admiral JONES. Sir, we would have no requirement for the HMMWV on the shore establishment side. I do not believe we have a requirement for it in the Seabees either.

Mr. STRATTON. Well, what would you use to replace the Jeep? Maybe you would not replace it, you would just buy the new, fancier models; is that it?

Admiral JONES. I would like to answer that question for the record, if I may, sir because I am not really sure of the answer.

Mr. STRATTON. I wish you would.

Admiral JONES. I will, sir.

[The following information was received for the record:]

WHAT WOULD REPLACE THE JEEP

The few military Jeeps the Navy has in inventory will be replaced with standard, commercial, off-the-shelf vehicles, primarily pick-up trucks.

Mr. STRATTON. The list you gave me there originally was of passenger vehicles. They do not all have to be sedans.

Admiral JONES. No, sir.

Mr. STRATTON. The quarter-ton truck was a very effective vehicle not only for passengers but for all sorts of other things.

Admiral JONES. Mr. Chairman, in the automotive vehicle area—passenger-carrying vehicles, trucks, and trailers, which would include sedans, vans, buses, carryalls, pick-up trucks, almost all commercial vehicles—we are talking about the shore activities. The biggest part of that line is the $25 million for 1983, $25 million, 1,826 items of equipment, all for the shore activities. None of that is tactical at all, sir.

On the operating forces side there are $3.8 million which would buy 95 units of equipment which is the extent of our tactical vehicle procurement in fiscal year 1983, sir.

Mr. STRATTON. I am just trying to see if there is anything that replaces the simple, small Jeep that has served so effectively in World War II for all of us.

Admiral JONES. There are no Jeeps in this procurement at all, sir. These are tactical vehicles--2½- and 5-ton trucks, and they are the same trucks the Army is buying.

Mr. STRATTON. I am talking about passenger-carrying vehicles. Would it have to be a 4-door sedan to be a passenger-carrying vehicle?

Admiral JONES. No, sir. We also have buses. I am not quite sure I understand the question.

Mr. STRATTON. What I am asking you is whether you have anything available that would serve the same function as the Jeep did, which is to provide a multi-service, universal applicability, small passenger-carrying vehicle—cheap, reasonable, easy to turn out.

Admiral JONES. I will answer that for the record, sir. I know we buy small pick-up trucks for use ashore. You are talking about ashore, Mr. Chairman?

Mr. STRATTON. That is right, yes. Obviously, I do not expect you to drive them on carrier decks.

Admiral JONES. No, but I mean you are talking about the shore activities, sir, as opposed to our construction battalions that operate overseas?

Mr. STRATTON. That is right, yes. You have a lot of shore establishments.

Admiral JONES. Yes, sir.

Mr. STRATTON. They drive around somewhere. So, I am trying to find out whether you are buying something special, or whether there is some sort of standardization that we had previously.

Admiral JONES. Just a minute, please, sir.

Mr. Chairman, we are using standard commercial sedans and pick-up trucks, and vans; but we are not buying Jeeps, sir, for the shore establishment.

Mr. STRATTON. I think you ought to look into that. I am not sure that you need all of that extra expense.

Go ahead. I would like to have you give me something for the record on that with regard to the rationale.

Admiral JONES. Aye, sir.

The following information was received for the record:]

WHY NAVY IS NOT BUYING JEEPS

It has been the Navy's experience over the past 20 to 30 years, that off-the-shelf commercial vehicles such as sedans, station wagons, small pick-up trucks, vans and occasionally 3-wheeled scooters and electric vehicles are considerably more cost effective, both in original acquisition cost and operation and maintenance costs than tactical, military designed vehicles including the ¼-ton jeep.

Mr. STRATTON. General, let me just ask you, the HMMWV is supposed to be a Jeep with a TOW attached to it, or something of that kind; is it?

General SKIBBIE. No, sir, I would not term it that because you realize, the Jeep really only has a capacity for ¼-ton load-carrying ability. The HMMWV has a ¾-ton capacity to begin with. It also has dramatically different operating capabilities and characteristics.

Mr. STRATTON. Well, what is the Army doing to replace the Jeep as such, that type of cheap, simple, all-purpose vehicle?

General SKIBBIE. That would be the CUCV', the commercial utility cargo vehicle. Where it does not require ballistic protection or the vehicle is not required to be in the front lines, you are going to find the Jeeps replaced with CUCV's. They are cheaper, for one thing.

Mr. STRATTON. They are what?

General SKIBBIE. They are cheaper.

Mr. STRATTON. What do you call it, the CUCV?

General SKIBBIE. Commercial utility cargo vehicle.

Mr. STRATTON. What is that?

Mr. LEATH. A pick-up truck. [Laughter.]

General SKIBBIE. That is what it amounts to. It is a commercially designed item. We went out on a market survey. We told the industry what we are interested in. We acquired 26 representative vehicles and tested them. We determined what shortcomings they had, what we needed to have corrected.

We then specified that we need: A heavy-duty suspension; a diesel engine; an automatic transmission; and a heavy-duty electrical system for a 100-amp generator. It will be a competitive procurement and example we expect to award a contract in June.

But I would not want to lead you to believe that we are going to replace every Jeep with a CUCV. We are certainly, though, not going to replace every Jeep with a HMMWV, only where the peculiar capabilities of the HMMWV are required, and that is basically close to the front line.

Mr. STRATTON. How much is this CUCV?

General SKIBBIE. That is $13,700 is our estimate.

Mr. STRATTON. Did you say $13,000?

General SKIBBIE. Yes, sir. We did a comparative shopping. For a similar vehicle with a $1,200 fleet discount we could only find a price of $12,700.

Mr. STRATTON. Well, I am not touting American Motors, but have you tried the Jeep itself? They have fancy models now, you can even ford streams with them.

General SKIBBIE. If we bought a military Jeep today it would cost $15,797.

Mr. STRATTON. A Jeep would cost $15,000?

General SKIBBIE. Yes, sir. So, that is why we say, we think we got a good mix between the HMMWV and the CUCV. If we replace our light-load fleet just as it sits today with HMMWV's and CUCV, it will cost less than to replace it with what it is composed of today, Jeeps, Gama Goats, Mules.

Mr. CAMPBELL. But it seems to me you need to mention the fact that you are going to replace your Jeep weapons carriers with HMMWVs.

General SKIBBIE. Really, on a two-to-one basis because if I have a TOW I have the TOW mounted on one Jeep and I have another Jeep and trailer carrying spare TOWs and other parts of the equipment of that three-man TOW team.

So, I can replace that two-Jeep, one-trailer team which costs in excess of $30,000 just for the vehicles with a one-vehicle team in a HMMWV, which costs about the same amount, but is a much more capable system.

Mr. STRATTON. This has got to be a maintenance nightmare with all these different vehicles.

General SKIBBIE. With the current fleet, yes, it is a problem. However, with the HMMWV and CUCV we are decreasing the number of vehicles, sir. Overall, we went from 8 different types of vehicles down to 4, 4 load classes, 35 different vehicles.

Mr. STRATTON. All right, sorry to have interrupted, Admiral. Go ahead.

Admiral JONES. Moving on to construction equipment, the situation here is similar to that displayed in the previous viewgraph on automotive equipment, in that for the operating forces construction equipment overage posture improves through 1984 at the end of this fiscal year, about 57 percent of our construction equipment in the operating forces would be overage. Through 1984 it is reduced to 51.1 percent. On the other hand, the construction equipment assigned to the shore activities continues to age.

We are in better shape with materials handling equipment, only 9 percent of our materials handling equipment for the fleet is retained overage after the proposed 1983 buy, and only 32 percent is retained overage on the shore establishment side.

In summary, through fiscal year 1984 the overage position of the operating forces will improve slightly from the current roughly 40 percent to 38 percent; and the overage posture of the shore establishment overall, automotive construction and materials handling equipment, does continue to age.

The last viewgraph, sir, is an indication of how we procure our equipment. You can see from this viewgraph that what the Navy procures for itself is only about 11 percent of our total buy, and we limit ourselves generally to structural fire trucks. Almost everything else is procured by some other consolidated agency. GSA buys the sedans and light trucks; the Army is buying the tactical vehiles—not very much of that in this buy. They also buy the heavy trucks, over 10,000 pounds; GVW and the Air Force procures our crash fire trucks.

That concludes my presentation. I will be glad to try and answer any other questions you might have.

WRITTEN STATEMENT OF REAR ADM. JOHN PAUL JONES, JR.

Mr. Chairman and members of the committee. I am Rear Adm. John Paul Jones Jr., Vice Commander of the Naval Facilities Engineering Command. It is a pleasure to appear before you to support the Navy's fiscal year 1983 budget request for civil engineering and supply support equipment. The Naval Facilities Engineering Command is the Navy's manager for civil engineering support equipment and the Naval Supply Systems Command is the Navy manager for materials handling equipment. For the purposes of this presentation, these two programs have been consolidated. These programs; i.e., Budget Activities 5 and 6, Other Procurement, Navy include other specialized equipment such as combat construction support equipment, fleet moorings, pollution control equipment, mobile utility support equipment, and automated material handling systems which are not addressed in this presentation. This presentation will be limited to the Navy's automotive, construction and materials handling equipment. That is to say, rolling stock, such as trucks, passenger carrying vehicles, Earth moving equipment, trailers, concrete mixers, forklift trucks, and other materials handling equipment, but will exclude the 10 ambulances and 17 buses that are a part of the fleet hospital program reviewed as a separate issue by the HAC, defense subcommittee.

These programs, in contrast to the tactical vehicle programs previously discussed by my Army and Marine Corps colleagues, are for the most part, commercially

available equipments used to logistically support the Navy's mission. Automotive and construction equipment support both shore activities and operating forces, primarily Seabees, while materials handling equipment is used aboard ship as well. Equipment proposed for procurement in fiscal year 1983 will fill some critical inventory shortages but basically replace worn out and obsolete equipment used to support a relatively constant mission.

This presentation is a brief overview of the total mission support requirement, called inventory objective or allowance; the inventory objectives and fiscal year 1983 and 1984 budget requests; overage postures and how the requested fiscal year 1983 and proposed fiscal year 1984 budgets affect them; and finally, the procurement agents used to consolidate acquisitions.

ANNUAL ALLOWANCE AND REQUIREMENTS REVIEW

Allowances.—Annual activity level review; submitted through chain of command; and approved by CNO.

Annual budget requirements.—Based on approved allowances; prioritized by activity; consolidated by commands; and budget includes highest priorities.

Although the details vary somewhat between civil engineering support equipment and materials handling equipment and between shore activities and operating forces, allowances or inventory objectives are all reviewed and justified at the activity level, submitted through the chain of command for review, and approved by the CNO. Replacement requirements are based on these approved allowances; are reviewed and prioritized at the activity level for each piece of eligible equipment based on age, mileage or hours, condition, and effect on mission support; are consolidated by major command in priority order; and, within program funding limits are included in the budget request. As the next few charts will show, only the highest priorities are included in the congressional budget.

OTHER PROCUREMENT, NAVY—BUDGET ACTIVITY 5 (CIVIL ENGINEER SUPPORT EQUIPMENT) AND BUDGET ACTIVITY 6 (SUPPLY SUPPORT EQUIPMENT)

	Fiscal year 1983 inventory objectives		Fiscal year 1983 Procurement		Fiscal year 1984 Procurement	
	Quantity	Millions	Quantity	Millions	Quantity	Millions
Automotive vehicles (Passenger-carrying trucks/trailers)	43,127	$684.6	2,194	$33.7	2,808	$41.3
Operating forces	3,892	99.8	368	8.3	435	14.1
(Tactical/M-series)	(1,201)	(43.5)	(95)	(3.8)	(118)	(7.4)
Shore activities	39,235	584.8	1,826	25.4	2,373	27.2
Construction equipment	12,821	591.8	598	30.9	880	46.4
Operating forces	3,633	190.1	270	17.5	413	29.2
Shore activities	9,188	401.7	328	13.4	467	17.2
Materials handling equipment	14,502	324.6	1,058	26.4	1,199	35.8
Operating forces	3,123	79.9	319	8.4	362	11.4
Shore activities	11,379	244.7	739	18.0	837	24.4
Total	70,450	1,601.0	3,850	91.0	4,887	123.5
Operating forces	10,648	369.8	957	34.2	1,210	54.7
Shore activities	59,802	1,231.2	2,893	56.8	3,677	68.8

This chart shows inventory objectives (or CNO approved allowances) relative to our budget request. For this presentation, budget line items have been consolidated into three categories; namely automotive, construction, and materials handling equipment.

The Navy's inventory objective for automotice equipment is 43,127. Our budgeted quantities will replace approximately 2,200 and 2,800 (or 5 and 6½ percent respectively) in fiscal years 1983 and 1984. As previously indicated, these are primarily commercial vehicles. However, the operating forces do use a number of tactical vehicles, primarily in the 2½- and 5-ton truck category, to support their combat con-

struction mission. These vehicles, a part of the total operating force quantities, are also shown separately. (As a non-add).

The inventory objective for construction equipment for both shore activities and operating forces totals some 12,800 pieces. Our fiscal year 1983 budget request contains approximately 600 units for $30.9 million, while the projected fiscal year 1984 program includes approximately 880 units priced at $46.4 million.

The budget requests $26.4 million to replace 1,058 pieces of materials handling equipment, primarily forklifts, in fiscal year 1983 and proposes to replace 1,199 for $35.8 million in fiscal year 1984 to support a fleet of approximately 14,500 units.

In total, the Navy's fiscal year 1983 budget request funds of $91.0 million to replace 3,850 pieces of equipment to support its fleet of 68,165 units of automotive, construction and materials handling equipment. The difference in relative funding level support between operating forces and shore activities inventories recognize a harsher in-service environment, more critical logistic support requirements, and a concerted effort to support the CNO's fleet readiness objectives.

OTHER PROCUREMENT, NAVY—BUDGET ACTIVITY—PASSENGER CARRYING VEHICLES, TRUCKS AND TRAILERS

	Inventory fiscal year 1982	Retained overage		
		Fiscal year 1982	Fiscal year 1983	Fiscal year 1984
Operating forces:				
Quantity	3,552	1,685	1,752	1,650
Percent		47.4	47.4	45.0
Dollar value (millions)	$87.0	$48.7	$48.7	$40.9
Shore activities:				
Quantity	38,406	11,591	16,032	19,624
Percent		30.2	41.4	50.6
Dollar value (millions)	$458.0	$147.3	$220.8	$253.6

These next three charts will show the impact of the fiscal year 1983 and estimated fiscal year 1984 budgets on the retained overage posture of our equipment.

The first is a projected overage status for automotive vehicles. The proposed funding levels in 1983 and 1984 for the operating forces will reverse the aging trend, and in the outyears, funding is planned to provide greater improvement. Although the shore activities inventory will continue to age through fiscal year 1984, it is expected that a recent initiative on the part of OSD to replace capital equipment using depreciation charges at Industrial Funded activities and the Navy's ongoing effort to realign resource sponsorship, bringing about a full awareness of "cost of ownership" will show an improvement in the overage posture of the rolling stock within a few years.

OTHER PROCUREMENT, NAVY—BUDGET ACTIVITY 5—CONSTRUCTION EQUIPMENT

	Inventory fiscal year 1982	Retained overage		
		Fiscal year 1982	Fiscal year 1983	Fiscal year 1984
Operating forces:				
Quantity	3,238	1,846	1,897	1,744
Percent		57.0	55.6	51.1
Dollar value (millions)	$157.2	$79.8	$102.3	$81.9
Shore activities:				
Quantity	9,032	5,518	5,842	5,967
Percent		61.1	65.5	66.9
Dollar value (millions)	$352.8	$230.5	$230.8	$228.3

The situation is similar for construction equipment. Requested funding will reduce the overage quantity for the operating forces from a high of almost 1,900 units in fiscal year 1983 to 1,744 after the proposed fiscal year 1984 procurements are delivered. The shore activities will continue to experience slight increases in

their quantities of overage construction equipment from approximately 5,500 units in fiscal year 1982 to slightly more than 5,900 through the proposed fiscal year 1984 program. Again, new programming initiatives should reverse this trend and provide modest improvement in the next 3 to 5 years.

OTHER PROCUREMENT, NAVY—BUDGET ACTIVITY 6—MATERIALS HANDLING

	Inventory fiscal year 1982	Retained overage		
		Fiscal year 1982	Fiscal year 1983	Fiscal year 1984
Operating forces:				
Quantity	2,780	276	250	238
Percent		12.0	9.0	7.0
Dollar value (millions)	$66.2	$7.4	$6.4	$5.7
Shore activities:				
Quantity	11,157	4,559	3,627	3,316
Percent		39.0	32.0	30.0
Dollar value (millions)	$240.9	$97.1	$78.0	$70.4

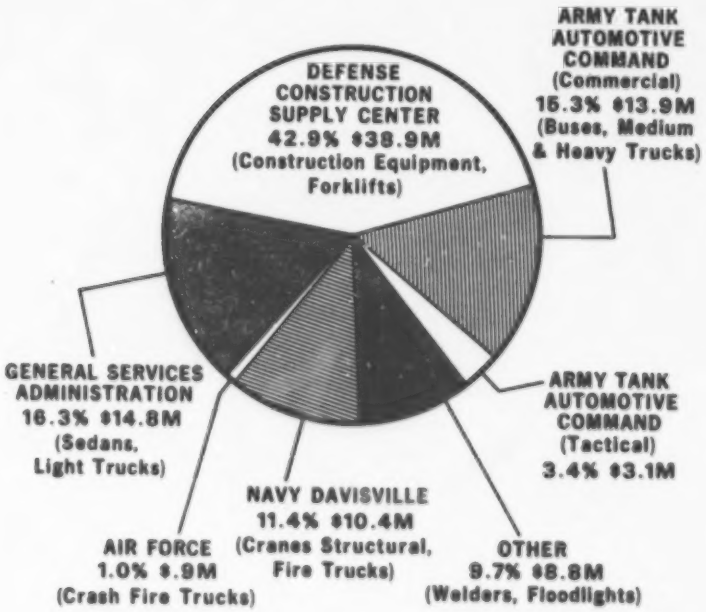
The fiscal year 1983 funding request for materials handling equipment will reduce the overage posture to 32 percent and 9 percent respectively for shore activities and operating units. Proposed funding in fiscal year 1984 and will continue this modest improvement to 30 percent and 7 percent for shore and operating units respectively at the end of this funding delivery period.

OTHER PROCUREMENT, NAVY—BUDGET ACTIVITIES 5 AND 6; TOTAL—AUTOMOTIVE, CONSTRUCTION AND MATERIALS HANDLING EQUIPMENT

	Inventory fiscal year 1982	Retained overage		
		Fiscal year 1982	Fiscal year 1983	Fiscal year 1984
Operating forces:				
Quantity	9,570	3,807	3,899	3,632
Percent		39.8	40.7	38.0
Dollar value (millions)	$310.4	$135.9	$157.4	$128.5
Shore activities:				
Quantity	58,595	21,668	25,510	28,907
Percent		37.0	43.5	49.3
Dollar value (millions)	$1,051.7	$474.9	$529.6	$552.3

In the aggregate, our overage posture for automotive, construction and materials handling equipment used by the operating forces will improve slightly from 40.7 percent in fiscal year 1983 to 38.0 percent at the end of the fiscal year 1984 funding delivery period. In order to provide necessary emphasis and support to the CNO's primary objective of fleet readiness, this portion has taken priority in our civil engineering and material handling equipment programs. Shore activities overage posture will continue to rise through fiscal year 1984, but modest improvements are expected in the next 3 to 5 years.

FY 83 PROCUREMENT PLAN
BY CONTRACTING OFFICE
OTHER PROCUREMENT, NAVY
CIVIL ENGINEERING SUPPORT EQUIPMENT
MATERIALS HANDLING EQUIPMENT



My final chart shows the fiscal year 1983 procurement plan by contracting office. Use of consolidated procurement centers results in cost effective execution of our replacement program. This shows that over 88 percent of Navy rolling stock procurement funds are handled by consolidated centers.

Mr. Chairman, this completes my statement.

Mr. STRATTON. Do you have any questions, Mr. Campbell?

Mr. CAMPBELL. No, sir.

Mr. STRATTON. We are going to have to hurry up here. Thank you very much, Admiral.

We will now get to General Carson of the Marine Corps.

STATEMENT OF BRIG. GEN. W. G. CARSON, JR., DIRECTOR OF MATERIEL DIVISION, INSTALLATIONS AND LOGISTICS DEPARTMENT, U.S. MARINE CORPS

General CARSON. Mr. Chairman, members of the committee, it is a privilege to be here today to present the fiscal year 1983 Marine Corps budget request.

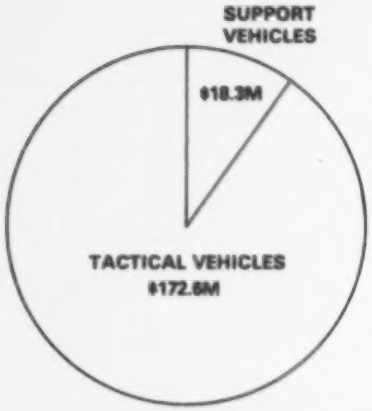
I have a prepared statement which covers this request, and with your concurrence would like to submit that statement and then address briefly the tactical vehicles and support vehicles.

Mr. STRATTON. Without objection, we will put that statement in the record and then, if you you can quickly summarize your procurement plans we appreciate it.

General CARSON. The Marine Corps programs pretty much parallel the Army, and they are mostly joint programs. Chart 1 reflects

our tactical vehicle request and our support vehicle request. Passenger vehicles are procured from GSA. Cargo covers, buses, special purpose vehicles and vans are procured either through GSA or TACOM if over 7,000 pounds gross vehicle weight.

TACTICAL MOTOR TRANSPORT & SUPPORT (Commercial) VEHICLES $190.9M



TACTICAL VEHICLES	
HMMWV	$40.4M
5 TON VEHICLES	80.3M
LOGISTICS VEHICLE SYSTEM	28.2M
5 TON RETROFIT PROGRAM	6.8M
OTHER	16.9M

SUPPORT (COMMERCIAL) VEHICLES	
PASSENGER	$ 2.0M
CARGO	16.3M

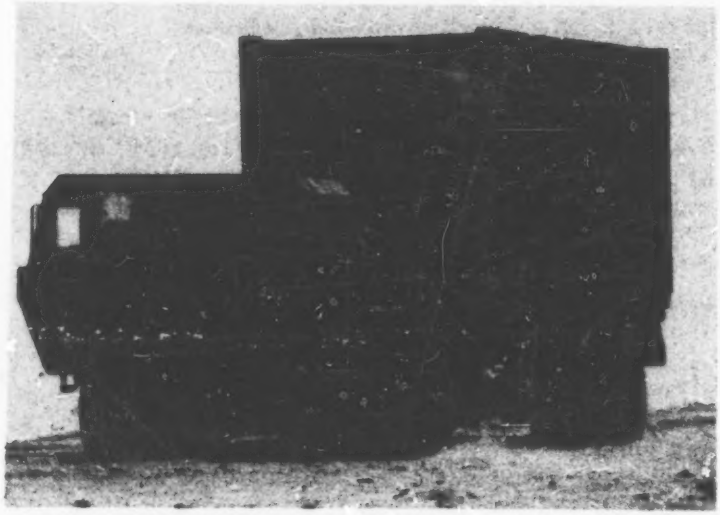
I will discuss further these four major programs in the tactical fleet by separate viewgraphs.

This other figure is comprised of air crash, fire and rescue vehicles, a joint program; lube units, kits, shop sets, steam cleaners and all of the necessary support equipment that support the tactical vehicle fleet.

5/4-Ton High Mobility Multipurpose Wheeled Vehicle (HMMWV)

$40.4m will procure 1,378 HMMWV's; deficiencies in existing light tactical vehicle fleet; replaces eight different light vehicles; wide variety of tactical mission roles; and joint service program with Army and Air Force.

The Marine Corps HMMWV program. We too have significant deficiencies in the existing light tactical vehicle fleet; table of equipment, war reserve deficiencies and, like previously mentioned, an aging fleet. The HMMWV in the Marine Corps will replace eight different light vehicles.



Mr. STRATTON. Which eight?

General CARSON. This replaces the M-151 Jeep, the M-718 ambulance, the M-561 Gama Goat, the M-792 ambulance, the M-274-A5 Mule and small trailer.

Mr. STRATTON. How much is that going to cost, General?

General CARSON. We are planning on $30,000, sir.

Mr. STRATTON. Thirty-thousand?

General CARSON. Yes, sir.

Mr. STRATTON. You have 5/4 of a ton, is that what it is?

General CARSON. Yes, sir.

Mr. STRATTON. One and a quarter ton, is that it?

General CARSON. One and a quarter ton.

Mr. STRATTON. That is not the weight, that is the carrying capacity; is that right?

General CARSON. That is correct.

Mr. STRATTON. All right, go ahead.

General CARSON. This is going to give us a wide variety of tactical mission roles for this equipment, command and control, MEDEVAC, personnel and cargo, and weapons carrier, to give you some examples. This is a joint program, as you can see here.

5-TON VEHICLES (M939)

$80.3 million will procure 1,039 M939's; deficiencies in existing medium tactical vehicle fleet; backbone of tactical vehicle fleet; product improved version; and joint procurement.

Also a joint program is the 5-ton vehicle. We have deficiencies in the existing fleet both in the hands of units, as war reserves, as well as a high deadline rate. This vehicle is the backbone of the tactical fleet, the cargo-personnel and weapons systems transport.

As previously briefed, this is the product-improved version of the 5 ton. There again, a joint program.

LOGISTICS VEHICLE SYSTEM (LVS)

$28.2 million will procure 172 systems; overage heavy tactical vehicle fleet; wide variety of logistics mission roles; associated with Army heavy expanded mobility tactical truck (HEMTT) program; and fiscal year 1982 supplemental.

This logistics vehicle system embraces our heavy tactical vehicle fleet. Here again in this fleet we have significant deficiencies and high-deadline rates. This vehicle will provide a wide variety of mission roles, both combat support and service support units.

This vehicle will be associated with our field logistics system, our complex of containers, shelter-mounted equipment, and reverse osmosis water purification system.

Mr. CAMPBELL. Do you have a picture of that one, General?

General CARSON. I have a photograph, not a viewgraph.

Mr. STRATTON. This is the same thing as the 10 ton, is it not?

General CARSON. It is associated with the 10-ton program, but it is a different vehicle. I would like to point out that there are commonalities.

Mr. STRATTON. Is this built by Oshkosh too?

General CARSON. The R. & D. version was built by Oshkosh under competitive R. & D.

Mr. STRATTON. They seem to be getting all the business; they got all the Air Force tank guns, too, as I understand it.

General BOWDEN. No, sir. I will give you that information when it is my turn.

Mr. STRATTON. All right. How much does this cost, General?

General CARSON. About the same as the 10 ton, $150,000.

Mr. STRATTON. It looks like money was going out of style. Go ahead.

General CARSON. I would like to point out that on this vehicle we have a fiscal year 1982 supplement pending for $20 million.

Mr. CAMPBELL. What do you need that for?

General CARSON. We want to get an early start buying into this 10-ton program. I cannot emphasize enough, and I can furnish for the record specific figures on the age of this fleet and their deadline rate. We are dealing with trucks and if you equated them to the commercial environment, insurance adjusters would total them. The time has come where we can no longer spend the money to maintain those we do have.

Mr. CAMPBELL. This will replace your 8 ton or your 10 ton?

General CARSON. This will replace the 10 ton, and this vehicle with its four trailer versions replaces the M-123, the M-127, the M-52, the M-49, and the M-50. It replaces a series of vehicles.

Mr. STRATTON. Well, now, you say you have a $20 million supplemental on this?

General CARSON. Yes, sir.

Mr. STRATTON. And what are you doing, you want to extend an existing contract, or are you going to go out and establish another contract?

General CARSON. It will be a new contract for this year that we are trying to enter into.

Mr. STRATTON. What is the competition on this, who else is in a position to build this truck?

General CARSON. The R. & D. contract that we entered into was competitive.

Mr. STRATTON. That does not concern us, that is another committee.

General CARSON. All right. I need this background, I think, Mr. Chairman, to answer your question because 11 people came in on this competition, but the RFP was written such that the successful manufacturer would get the sole-source contract for the production model.

The intention right now is in line with the Army's 10-ton program, the commonality of components and assemblies of the Dragon Wagons that you are looking at, and the Army 10-ton program. The intention is sole source to Oshkosh on this vehicle.

Mr. CAMPBELL. You want to purchase 230 vehicles with that $20 million supplemental, is that correct?

General CARSON. 115 systems.

Mr. STRATTON. I thought you said there were going to be 11 people bidding on this, and the successful bidder would get the contract.

General CARSON. Eleven people bid on the competitive R. & D. contract, and the RFP for that competition stated that the successful bidder for the R. & D. version, if the R. & D. version tested out, would be sole source on the production work.

Mr. STRATTON. What is this, is this just a prototype?

General CARSON. That is a picture of the prototype tested, yes, sir.

Mr. STRATTON. So, you mean the thing has already gone to Oshkosh and you just want us to give you the money for it; is that it?

General CARSON. That is right.

Mr. STRATTON. General, one other question. You said the HMMWV for the Marine Corps costs $30,000 a copy. The Army's version costs $32,000 a copy. How did you achieve those savings of $2,000?

General CARSON. I gave you an average figure, Mr. Chairman. According to our figures, one version is $34,000; one is $27,000, and one is $33,000. The figure I gave you was an average of $30,000.

Mr. STRATTON. What did the Army give us, then?

General SKIBBIE. We did not give it to you, sir. But if we had averaged the price in 1983 it would be $32,711 for the combination of HMMWV's that we would be buying that year.

Mr. STRATTON. Why the difference?

General SKIBBIE. There is no difference. It simply is a question of determining what mix you are going to buy because the utility version costs $27,000, we are estimating it costs $27,000. The weapons carrier version costs $34,000, and the ambulance costs $33,000. So, I would expect that you are going to buy many more utility versions. In fact, I know the Army is going to buy many more utility versions than it buys weapons carrier versions. So, the average is going to be skewed to the lower end of that spectrum.

Mr. STRATTON. Does that complete your presentation?

General CARSON. I have two final viewgraphs, sir.

5-TON RETROFIT PROGRAM

$6.8 million will procure 273 retrofit kits.
Cost comparison: Procurement M-939, $20.1 million; retrofit M-54, $14.1 million; and cost avoidance, $6.0 million.

The Marine Corps has a 5-ton retrofit program, taking the best, the newest of the existing M-39 family of M-54 5-tons for application of retrofit kits costing $6.8 million. The overall dollars added for a total of $14.1 million. This is compared to new procurement of the M-39's across the board saving $6.0 million in fiscal year 1983. We are going to retrofit the best and the newest of our existing 5-ton fleet.

This 5-ton retrofit program, coupled with the new procurement 5-ton program that I previously mentioned, will replace our existing fleet.

TACTICAL ENGINEER &
SUPPORT (Commercial) VEHICLES $48.6M

TACTICAL ENGINEER

TRACTOR MEDIUM FULL-TRACK	$30.2M
SCRAPER TRACTOR	7.8M

GARRISON MOBILE EQUIPMENT

ENGINEER EQUIPMENT	7.3M
MATERIAL HANDLING EQUIPMENT	3.3M

Budget Activity 6, tactical engineer and support equipment. We are buying tactical engineer equipment. Here again we are talking about equipment that is old and tired, for our TE and war reserve deficiencies. We are also buying garrison mobile equipment, forklifts, cranes, transporters, trailers, concrete mixers, compressors, in this area.

Mr. STRATTON. All right, General. We want to get the Air Force on. We are going to have to close at 12:30. So, thank you very much. We will have your full statement in the record.

FY 1983 PROCUREMENT, MARINE CORPS OVERVIEW

Mr. Chairman and members of the Committee, I am Brigadier General William G. Carson, Junior, Director, Materiel Division, Installations and Logistics Department, Headquarters, U. S. Marine Corps. It is a privilege to appear before you today to present the fiscal year 1983 Procurement Marine Corps (PMC) budget request.

The fiscal year 1983 Procurement, Marine Corps budget request is a manifestation of the shift in national policy to a Maritime/Sea strategy and is a clear recognition of the role that the Marine Corps plays in the execution of that strategy. The focus of world tensions is no longer limited to continental Europe; rather it is broadening to include the Middle East and has the potential to enlarge beyond that. The need for a potent force-in-readiness capable of global responsiveness is a requirement of the maritime strategy. The Marine Corps provides the forces to fill that requirement.

This year our procurement budget request totals $2,300.7 million, an increase of $569.2 million over last year's approved budget. This amount is broken down by budget activity and compared to fiscal year 1982 and fiscal year 1984 on Chart 1 below.

PROCUREMENT, MARINE CORPS (CHART 1)

	ACTIVITY	FY 82	FY 83	FY 84
1.	AMUNITION	314.5	630.2	345.1
2.	WEAPONS AND TRACKED COMBAT VEHICLES	424.2	486.0	431.9
3.	GUIDED MISSILES AND EQUIPMENT	213.8	263.9	250.0
4.	COMMUNICATIONS AND ELECTRONICS	325.1	476.8	549.1
5.	SUPPORT VEHICLES	174.7	190.9	211.2
6.	ENGINEER AND OTHER EQUIPMENT	279.2	252.9	200.3
	TOTAL	1,731.5	2,300.7	1,987.6

Foremost, this request continues to fund long standing deficiencies that impacted on the readiness and effectiveness of our Fleet Marine

Forces. These deficiencies include principal end items, secondary reparables and spare parts, and perhaps, most importantly, ammunition. It also substantially improves the material readiness of the reserve establishment.

During the 1970's the modernization of munitions, telecommunications equipment, intelligence equipment, command-and-control systems, tactical vehicles and engineer equipment -- for all practical purposes -- stood still. Modernization was always programmed into the outyears; now the outyears are here. The composition of this budget alleviates, to some extent, our previously expressed concern about the extremely limited force modernization accomplished under the austere budgets of recent years. Thus, a significant portion of this increase will be dedicated to force modernization with emphasis on increasing and improving the tactical mobility and firepower of our ground forces in order to ensure future readiness.

Specifically, modern munitions to accompany our new 155mm howitzers, light armored vehicles to offer troop mobility and armored protection, improved surface to air missiles to replace the aging Redeye Missile, and the replacement of Vietnam-era radio equipment and outdated radars exemplify modern items in this budget. Significant improvements in the ability to command and control maneuvering elements have been made with modern, automated and electronic counter measure protected systems. The entire tactical vehicle fleet, currently 1960 vintage, is being replaced with new vehicles. Antiquated engineer equipment, much of which is now unserviceable, is being replaced. The equipment being procured with fiscal year 1982 and 1983 funds will bring the Marine Corps out of the 1960's and, if committed, enable its forces to be effective on the battlefields of the 1980s and beyond.

In addition to modernization, three significant force structure changes were decided upon last year to provide more combat capability to the Fleet Marine Force. These changes include adding artillery battalions, Light Armored Vehicle battalions and additional TOW platoons to the present force structure. This budget allows for substantial acquisition of weapons, munitions and support equipment to

facilitate the force structure changes. Not only will this budget allow us to proceed with critically needed force modernization, support force structure changes and contribute substantially to our constant endeavor to improve readiness and provide for improvement and sustainability, it will also provide for adequately phased acquisition of our prepositioning needs.

The fiscal year 1983 PMC budget request has $242.7 million for our two prepositioning programs, the Maritime Prepositioning Ships (MPS) ($231.3M) and Norway ($11.4M) programs. These investments are additive to existing Marine Corps requirements and help explain the growth in the PMC appropriation. The following summary, Chart 2, depicts the funds by budget activity with the portion dedicated to prepositioning programs.

CURRENT FORCE STRUCTURE/PREPOSITIONING PROGRAMS (CHART 2)

Activity	Current Force Structure	Maritime and Geographical Prepositioning	Total
1. AMMUNITION	630.2	-	630.2
2. WEAPONS AND COMBAT VEHICLES	329.4	156.6	486.0
3. GUIDED MISSILES AND EQUIPMENT	263.9	-	263.9
4. COMMUNICATIONS AND ELECTRONICS	454.5	22.3	476.8
5. SUPPORT VEHICLES	165.9	25.0	190.9
6. ENGINEER AND OTHER EQUIPMENT	214.1	38.8	252.9
TOTAL	2058.0	242.7	2300.7

The following provides a more detailed statement of our fiscal year 1983 request by budget activity.

AMMUNITION (CHART 3)

ITEM	FY 82 SM	FY 83 SM	FY 84 SM
155mm ARTILLERY	137.5	396.1	142.1
8" ARTILLERY	29.5	65.2	26.0
TANK	38.0	7.5	22.6
MORTAR	18.3	3.6	15.5
25mm	12.0	18.0	9.0
SMALL ARMS	44.1	76.5	70.8
OTHER	35.1	63.3	59.1
TOTAL	314.5	630.2	345.1

As noted on Chart 3 the fiscal year 1983 request for ammunition is $630.2 million. This year's request marks the second year since the early 1970's that we will not consume more ammunition in training than we have procured. This direction is positive and continues a welcome change.

Specifically, we are requesting $396.1 and $65.2 million for 155mm and 8" artillery ammunition respectively. The large investment in 155mm howitzer ammunition reflects the changeover from 105mm howitzers to 155mm howitzers in our direct support artillery battalions. We are requesting $7.5 million for tank ammunition, and $3.6 million for mortar ammunition. The $18.0 million we are asking for 25mm ammunition will be used in support of requirements for the Light Armored Vehicle. Our request for $76.5 million for small arms ammunition is a sizable increase over last year's request and supports various new small arms weapons in last year's and this year's budgets. The balance of our requirements in this activity totals $63.3 million and is needed for ammunition modernization, linear charges and other essential munition programs.

WEAPONS AND TRACKED COMBAT VEHICLES (CHART 4)

ITEM	FY 82 Q/$M	FY 83 Q/$M	FY 84 Q/$M
LVT7A1/LVT SLEP	* /233.0	531/308.7	390/270.0
LIGHT ARMORED VEHICLE	60/36.2	134/89.7	141/84.3
M198 HOWITZER	159/58.3	-	-
SMALL ARMS	60.3	60.8	47.4
OTHER	36.4	26.8	30.2
TOTAL	424.2	486.0	431.9

*FY 81 Funds ($52.1M) and FY 82 Funds ($233.0M) have been combined in initial contract.

Turning to Chart 4 which capsulates Budget Activity 2, Weapons and Tracked Combat Vehicles, $308.7 million is requested for two LVT programs. Specifically, $151.5 million is requested to support the third of a planned five-year effort to acquire an additional 329 assault amphibious vehicles of the latest configuration (LVT7A1). This planned increase in inventory satisfies currently known requirements for the MPS program and adds two command vehicles in support of live fire, combined arms exercises. Associated with this requirement is a request for $157.2 million needed to continue a service life extension program (SLEP) for the current amphibious vehicle fleet. Funds requested represent the third year of a six-year program to bring the current inventory to the more modern LVT7A1 configuration. This program will provide sufficient amphibious capability until introduction of a replacement vehicle sometime in the 1990's.

Our request also includes $89.7 million to support the second year of a planned six-year procurement program for the Light Armored Vehicle (LAV). This vehicle procurement effort will provide an armored protection on the battlefield, while at the same time add tactical mobility and assault fire support to aid Marine forces in meeting the current threat and more effectively accomplish assigned missions.

We are requesting $60.8 million for small caliber weapons to include. $3.0 million for 50 caliber machine guns required for maritime preposi-

tioning; $8.4 million for a new lightweight, squad automatic weapon; $16.5 million for a new 40mm machine gun (MK-19); $28.5 million for replacement of worn out M16A1 rifles with an updated version that includes improvements in reliability and operational capability; $2.0 million for the Department of Defense standard 9mm Handgun that is replacing the antiquated .45 caliber pistol; $2.2 million for a new infantry assault weapon and $.2 million for the 7.62mm machine gun.

In this activity we are also requesting $26.8 million for other essential items including: $19.9 million for initial and replenishment spare parts necessary for fielding new items of equipment and the continued support of items already in the field, $4.7 million to acquire modification kits for fielded weapons and tracked combat vehicles to improve safety, reliability, and serviceability of specific equipments, and $2.2 million for other essential programs including items costing less than $900,000 each.

GUIDED MISSILES AND EQUIPMENT (CHART 5)

	FY 82	FY 83	FY 84
ITEM	Q/$M	Q/$M	Q/$M
IMPROVED HAWK SYSTEM	388/80.1	213/75.4	138/50.4
IMPROVED HAWK (MOD)	23.4	20.7	15.1
TOW SYSTEM/PIP	2666/66.1	1000/38.0	2371/53.6
STINGER	488/38.9	1560/115.6	1440/115.7
OTHER	5.3	14.2	15.2
TOTAL	213.8	263.9	250.0

Budget Activity 3, Guided Missiles and Equipment, is summarized on Chart 5. We are requesting $75.4 million to support the HAWK Missile System to include acquisition of 213 missiles plus ground support equipment required for continuation of the HAWK Missile TRIAD program. The TRIAD requirement represents the third year of a planned six-year program to equip four HAWK battalions with four TRIAD batteries each -- a 175% increase over current firepower. We are also requesting $20.7 million for

continued product improvement of the HAWK ground support equipment. One other enhancement to the HAWK missile is the addition of the Missile Electronic Counter Counter Measures (ECCM) Upgrade which will correct a potentially serious ECCM shortfall.

We are requesting $38.0 million for acquisition of additional TOW guided missiles and associated ground support equipment required to support our planned inventory objective and to meet immediate maritime prepositioning needs. This sum includes $9.4 million to support the third year of a planned three year product improvement program for the TOW System which provides for modification of missile warheads and guidance link equipment in order to counter the opposing tank threat.

We are also requesting $115.6 million for procurement of 1560 STINGER missiles and system equipment representing the fifth year of a planned nine-year procurement of the STINGER air defense missile system. Acquisition of STINGER ground support equipment will be completed with procurement planned in fiscal year 1983; however, missile acquisition will continue through fiscal year 1988. The lightweight, shoulder-fired STINGER, which is replacing our present REDEYE missile system, will provide Fleet Marine Force units with a vastly improved low-altitude air defense missile capability during amphibious operations and subsequent operations ashore.

The balance of requirements in this budget activity totals $14.2 million and is for initial and replenishment spare parts and specific minor modifications to missile system componentry.

COMMUNICATIONS AND ELECTRONICS EQUIPMENT (CHART 6)

ITEM	FY 82 Q/$M	FY 83 Q/$M	FY 84 Q/$M
TELECOMMUNICATIONS			
RADIOS (MAN/VEHICLE)	42.9	57.1	68.1
DIGITAL COMM TERM	390/9.0	596/17.8	1717/55.4
OTHER TELCOM	43.4	25.2	86.7
SUB TOTAL	95.3	100.1	210.2
NON-TELECOMMUNICATIONS			
PLRS SYSTEMS	-	2/44.2	2/50.0
TAC AIR OPS CTR-85	-	-	3/85.6
INTEL ANALYSIS CENTER	4/64.0	2/24.1	1/14.1
TPS-59 RADAR	-	10/126.3	-
NIGHT SIGHTS	42.4	4..6	6.1
MULE	40/21.2	120/47.8	120/16.8
ADP EQUIPMENT	30.7	15.5	34.2
OTHER ELECTRONICS	71.5	73.2	132.1
SUB TOTAL	229.8	376.7	338.9
TOTAL	325.1	476.8	549.1

Chart 6 describes Budget Activity 4, Communications and Electronics Equipment. In this activity we are requesting $476.8 million for the replacement of obsolescent equipment currently in use, acquisition of inventory shortages, and partial satisfaction of maritime prepositioning needs. Our requirements are for both telecommunications and non-telecommunications equipment.

In telecommunications, we are requesting a total of $100.1 million. Major procurements consist of $57.1 million for manpacked and vehicle-mounted radios including: $25.6 million for AN/PRC-( ), AN/PRC-77, AN/VRC-12, and AN/GRA-39B radios necessary to meet phased acquisition of inventory objectives and to satisfy currently known maritime prepositioning needs; $6.2 million for the VINSON Installation Kits, required for connecting the VINSON secure voice equipment with wideband VHF/FM

and UHF/AM radios; $3.9 million for the initial acquisition of the CP-1380, Steerable Null Antenna Processor, which will provide an electronic countermeasures capability for tactical radios; $6.2 million for the second and final year procurement of the AN/TRA-( ) used within Marine Air Command and Control Systems for communication purposes; $5.5 million for the fifth and final year acquisition of Satellite Communications Terminals, and $9.7 million for other related equipment. These equipments will provide reliable, secure, inter-and-intra-theater communications for all Fleet Marine Force units.

Our telecommunications request also includes $17.8 million for the Digital Communications Terminal. This will be the second-year buy of a hand-held programmable unit used for composing, editing, transmitting, receiving, and displaying messages in conjunction with standard military radios.

The balance of our requirements for telecommunications equipment consists of $25.2 million including: $13.3 million for repair parts and spares necessary for the fielding of new end items of equipment and the continued support of end items already in the field; $3.7 million for modification kits to correct deficiencies or increase operational capabilities of fielded end items; and $8.2 million for other essential telecommunications programs.

In the non-telecommunications category we are requesting $376.7 million. Our budget contains $44.2 million for the Position Location and Reporting System (PLRS) a new capability which provides the tactical commander with the location of friendly ground units and aircraft in his zone of action. This capability will significantly enhance combat effectiveness and improve the probability of success on the battlefield while reducing the possibility of friendly casualties.

We are requesting $24.1 million for the acquisition of the fifth and sixth units of an inventory/acquisition objective of seven Intelligence Analysis Centers which is an integral segment of the Marine Air-Ground Intelligence System. The analysis center will process intelligence information gathered from the Naval Intelligence Processing System, EA-6B and RF-4B aircraft, signal intelligence sources, and

ground intelligence reports, as well as theater and national surveys. It will meet a vital part of our battlefield surveillance requirements.

Our request includes $126.3 million for the AN/TPS-59 Radar Set. This radar is designed primarily to provide long range air defense surveillance of a tactical air space to the Tactical Air Operations Center (TAOC). The AN/TPS-59 represents the best hardware and energy management philosophy in application today. It will be the primary long range radar surveillance sensor for Marine Corps combat forces for the next 15-20 years. This procurement will meet our inventory objective of eleven AN/TPS-59 Radar Sets.

We are further requesting $45.6 million for the acquisition of night vision systems, and $47.8 million for the acquisition of 120 Modular Universal Laser Equipment Systems. This latter device is designed to provide forward observers the capability of determining location and range to military targets and designation of targets for aircraft and artillery weapons having guided munitions. In addition, we are requesting $15.5 million to continue replacement of IBM 360 computers and peripheral equipment currently in use throughout the Marine Corps. Data processing equipment will also be requested for our Fleet Marine Forces. One example is the Force Automated Services Center, which provides rapidly relocatable data processing support for deployed Marine Air-Ground Task Forces.

The balance of our funding requirements for non-telecommunications equipment is $73.2 million which includes: $4.0 million to support the acquisition of team portable direction finding sets designed to locate enemy transmissions; $43.3 million for spares and repair parts and modification kit requirements; and $25.9 million for other essential non-telecommunications requirements.

SUPPORT VEHICLES (CHART 7)

ITEM	FY 82 Q/$M	FY 83 Q/$M	FY 84 Q/$M
COMMERCIAL VEHICLES	9.1	18.3	24.8
HMMWV	-	1378/40.4	2409/68.8
5 TON TRUCK FAMILY	69.9	80.3	59.3
5 TON RETROFIT PROGRAM	-	6.8	14.2
LOGISTICS VEHICLE SYSTEM	115/20.0	172/28.2	135/24.5
OTHER TACTICAL VEHICLES	56.5	3.7	5.2
OTHER VEHICLE SUPPORT	19.2	13.2	14.4
TOTAL	174.7	190.9	211.2

Under Budget Activity 5, Support Vehicles, on Chart 7, we are requesting $18.3 million for replacement of commercial passenger and cargo vehicles required for administrative support of our bases, air stations and our Fleet Marine Forces while they are in a garrison environment. Additionally, we are requesting $40.4 million for the High Mobility Multipurpose Wheeled Vehicle (HMMWV). The HMMWV is a joint Marine, Army, and Air Force program. This vehicle, having different body configurations, will perform a wide variety of tactical mission roles and will replace eight different light vehicles and trailers in current inventory. All variants will have a common chassis, engine, and drive train and will contribute significantly to our overall goals of simplifying or reducing operator and maintenance training and logistics support requirements.

We are also requesting $80.3 million to support the continued acquisition of the product improved five-ton series of vehicles and related retrofits. This request includes: $1.4 million for 18 five-ton tractors, used as the prime mover for various semi-trailers, $63.8 million for 842 product improved five-ton cargo trucks which, besides normal cargo missions, is slated as the prime mover for the M198 howitzer; $7.0 million for 80 five-ton dump trucks; and $8.1 million for 99 five-ton extra long wheel base cargo trucks that will carry heavy, oversized loads over rough terrain and will also be used to transport the HAWK Missile. Finally, $6.8 million will

be used to procure 5 Ton Truck retrofit kits. Once procured these kits will be used during fiscal year 1983 to convert 273 of our existing M54 trucks into the product improved M813A1 5 Ton Cargo trucks. By converting the old trucks into new ones we have been able to eliminate the purchase of new vehicles and — in fiscal year 1983 alone — will save $6.0 million.

The balance of our requirements in this activity includes $28.2 million for the Logistics Vehicle System (LVS). An LVS will have a 16 Ton prime mover and one of four different powered rear-body units. Fiscal year 1982 funding for the LVS, $20 million, is currently before the Congress in the DoD supplemental request. This vehicle system has been closely associated with the Army's Heavy Expanded Mobility Tactical Truck (HEMTT) program including approximately 85 percent commonality of parts. There is also $3.7 million for aircraft crash, fire and rescue vehicles and $13.2 million for repair parts, modification kits, and other essential tactical vehicle programs.

ENGINEER AND OTHER EQUIPMENT (CHART 8)

ITEM	FY 82 Q/$M	FY 83 Q/$M	FY 84 Q/$M
SCRAPER TRACTOR	-	42/7.8	42/8.4
TRACTOR MED.FULL TRACK	121/13.2	216/30.2	3/.4
REVERSE OSMOSIS	287/44.5	100/16.9	90/16.4
WATER SUPPLY SUPPORT SYS.	2/5.4	2/9.8	2/9.2
AMPHIB. FUEL SYSTEM	29/30.5	8/9.2	11/13.6
MEDIUM GIRDER BRIDGE	22/31.3	23/30.5	20/28.0
POWER EQUIP ASSORTED	12.1	15.5	13.4
RAP DEP MED EQUIPMENT	25.0	-	-
SHELTER FAMILY	16.9	19.4	30.4
CONTAINER FAMILY	3.3	4.1	4.0
OTHER	97.0	109.5	76.5
TOTAL	279.2	252.9	200.3

Of the items listed on Chart 8, Budget Activity 6, Engineer and Other Equipment, we are requesting $7.8 million for 42 scraper-

tractors, the first year of a planned two year procurement. There is $30.2 million for 216 medium full-tracked tractors. These tractors are general construction and earthmoving items which will provide for higher productivity, lower maintenance and improved capability over equipment in the inventory. We are requesting $16.9 million for the procurement of 100 Reverse Osmosis Water Purification Units. This is the third year of a phased program to replace four types of over-age water purification equipment now in the inventory. We are also requesting $9.8 million for water distribution equipment, the second year of a three year funding request, which will enhance our capability to efficiently distribute water to forward areas.

Our request also includes: $9.2 million for procurement of eight Amphibious Assault Fuel Systems required for application towards existing inventory deficiencies; $30.5 million for 23 medium girder bridges, the second year of a three year funding program, which will provide a light-weight, easily transportable bridging system which can be erected by hand in various configurations in support of a wide range of Marine Corps bridging requirements; and $15.5 million for assorted power generating/conversion equipment in support of electric power consuming systems.

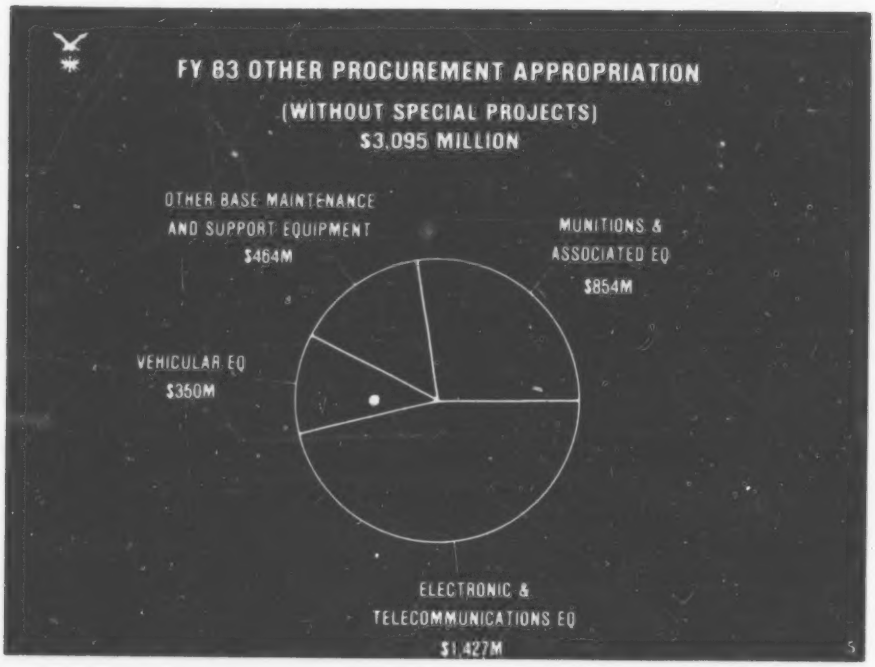
We are also requesting $19.4 million for procurement of 659 expeditionary shelters needed to provide environmental protection for specific functions supporting multi-climate operations, and $4.1 million for the container family. Other significant requirements total $109.5 million including: $25.2 million to continue the progressive elimination of deficiencies in command support equipment, $7.3 million for replacement of over-age garrison mobile engineer equipment; $7.7 million for spares and repair parts; and a balance of $69.3 million applied to standard military air conditioners, special training devices, field medical equipment and other engineering equipment.

Mr. Chairman, this budget will permit the Commandant of the Marine Corps to carry on effectively his responsibilities for equipping, training, and maintaining an integrated air-ground general purpose force, a truly rapid deployment force ready and capable of conducting successful amphibious or other types of conventional operations in support of our national security objectives.

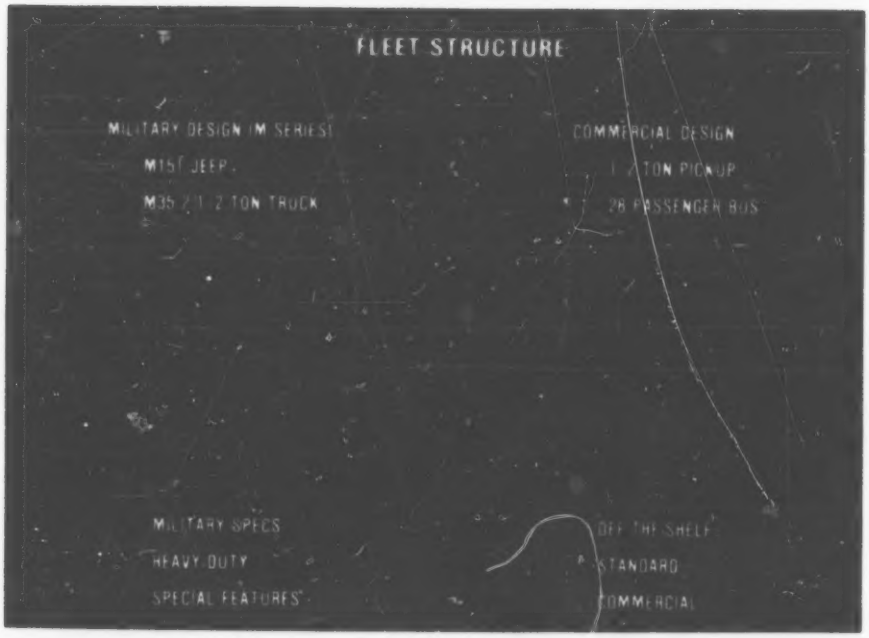
General Bowden, it is your turn now on behalf of the Air Force.

STATEMENT OF BRIG. GEN. WILLIAM P. BOWDEN, DEPUTY DIRECTOR OF LOGISTICS, PLANS AND PROGRAMS, DEPARTMENT OF THE AIR FORCE

General BOWDEN. Yes, sir. I request permission to enter my statement in the record, sir, and I will just quickly go through my graphs and describe our program.



This is what we are talking about in our 1983 request, sir, $350 million is our total vehicle buy in Other Procurement, Air Force.



This shows our design criteria. Ninety percent of our procurement of commercial or modified commercial designed; for 10 percent of it we go to the Army specifically, for military specifications vehicles.

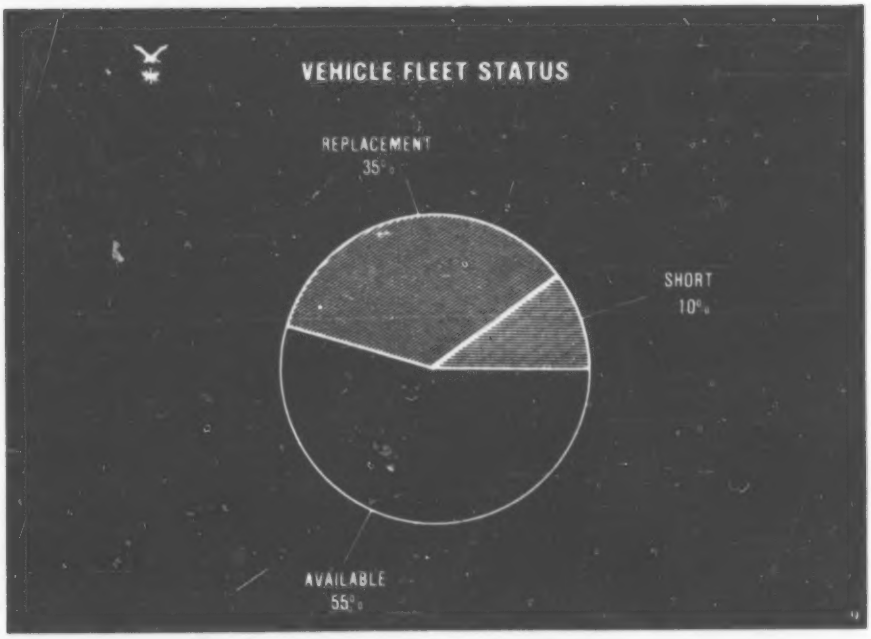
Mr. STRATTON. You actually go for the Jeep?

General BOWDEN. In the future, sir, we will be "in bed" with what General Skibbie mentioned. We will be using the high mobility vehicle and the new vehicle he described. But we will be spreading those requirements out and working on improving them.

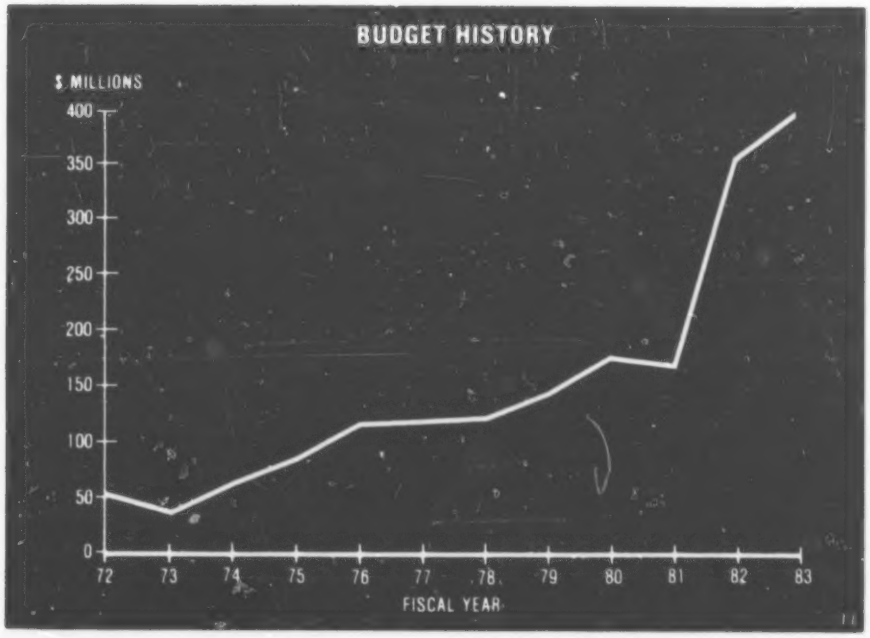
Mr. STRATTON. That is a lot of money for something that takes place in the future.

General BOWDEN. Sir, they are specifically used in security police operations; they are used by forward air controller teams in the battlefield, carrying such things as communications, electronics packages. We have scrubbed these requirements very carefully, sir.

Mr. STRATTON. All right.

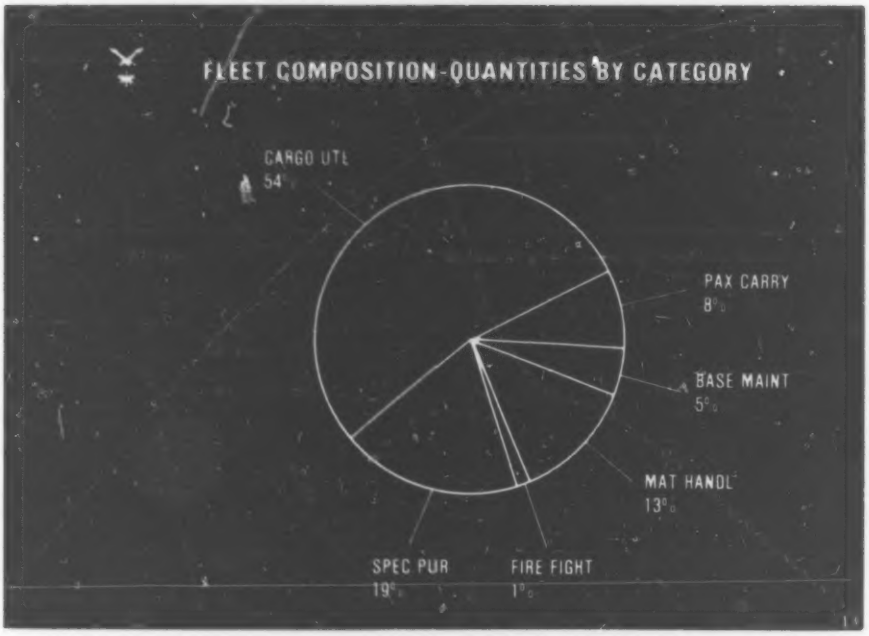


General BOWDEN. Our vehicle situation as far as aging and replacement. Almost one out of two is the age required for us to replace it at the present time. We have a 5-year program to modernize.



This shows the amount of dollars that the Air Force has been spending over the last several years. We have not put much money

into our vehicle fleet until 1981, and over the next 5-year period we will be putting substantial dollars into a modernization program. I will show you our plan at the end of the briefing.



This is the composition by category. This is the area that we talked to Mr. McCurdy about earlier, 2 percent of our vehicles are in the sedan category. The rest of that 8 percent deals with buses and ambulances.

This is the biggest area where the Air Force needs to modernize; refueling trucks, our firefighting trucks, and material handling vehicles.

Mr. STRATTON. Are you going to address that firefighting truck?

General BOWDEN. We will do it, sir.

Mr. STRATTON. We do not have too much time, why not get to that?

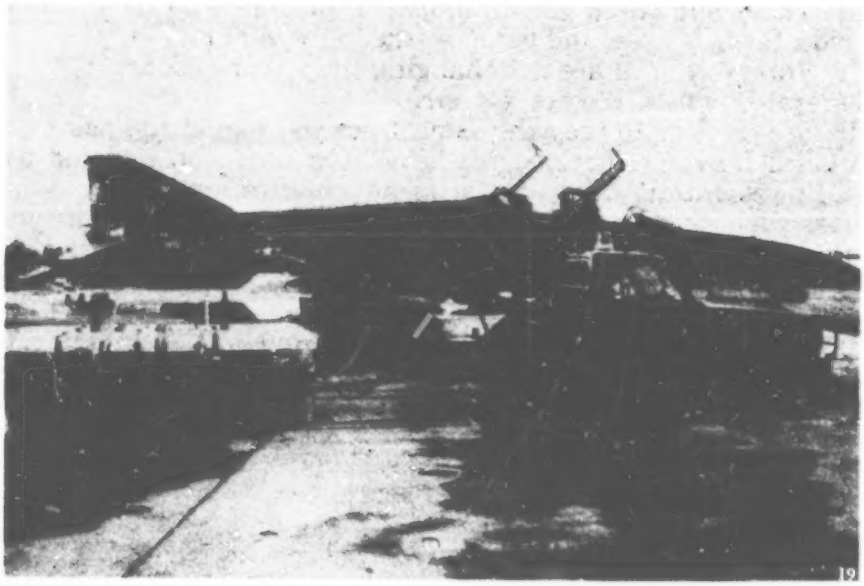
General BOWDEN. All right, sir.

Mr. STRATTON. I do not think these pie graphs really give us a hell of a lot of information.

General BOWDEN. All right, sir, I will specifically answer your question right now on the firetruck.

Mr. STRATTON. Do you have a picture of what it is you are procuring?

General BOWDEN. Yes, sir. Will you flip straight through to the photos? I will just briefly flash them up. The first photo is a refueling truck. The Kovatch Co. of Pennsylvania currently has the 3-year multiyear contract. It is towing equipment, and this is other towing equipment, all contracted for using contracting procedures competitive.



The firetruck. You asked me a couple of weeks ago, sir, if we bought all of our fire equipment from Oshkosh.

Mr. STRATTON. We had some complaints about that, that you were juggling the specifications to favor Oshkosh. We have a few producers in New York.

General BOWDEN. Yes, sir. In the past we have bought firetrucks from Pierce Manufacturing Co. in Wisconsin and another company called Fire Trucks, Inc., in Michigan, along with Oshkosh.

Currently we are in a source selection process for the next group of firetrucks and there are a number of bidders who have submitted bids. So, it is open and being worked now, sir.

Mr. STRATTON. You are not changing the specifications?

General BOWDEN. We are not, sir.

Mr. STRATTON. Are they the same specs you had in the past?

General BOWDEN. These specs have been used and updated over time. But essentially they are the same specifications, sir.

After you asked the question 2 weeks ago I went with our engineering community and our managers at Warner Robins Air Logistics Center and had another evaluation of them. The specifications are competitive, sir.

Mr. STRATTON. I cannot remember now some of the unique capabilities that Oshkosh was not supposed to have. I cannot remember, some automatic arrangement. I can go back in my notes, but maybe you recall what it was.

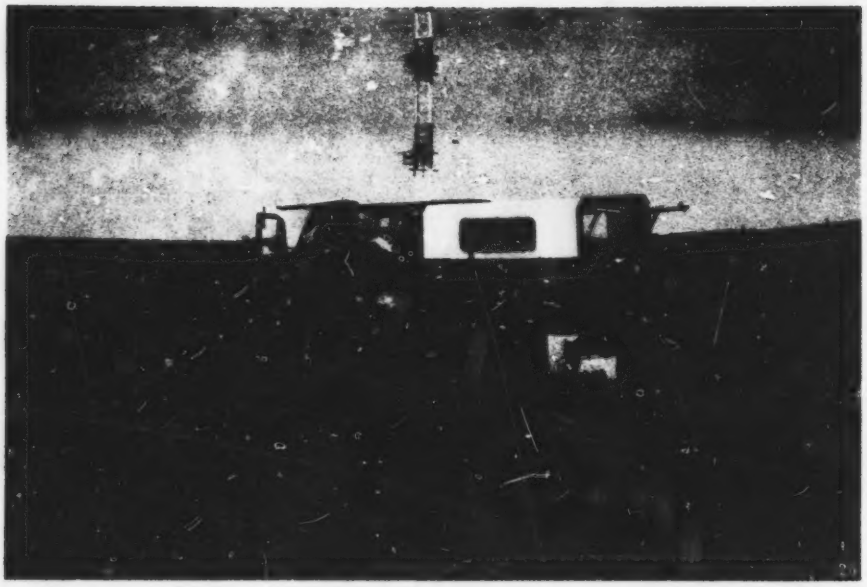
General BOWDEN. I do not recall, sir, my staff does not either. I will research that further and get back to you.

Mr. STRATTON. All right.

[The following information was received for the record:]

SPECIFICATION TO FAVOR OSHKOSH

Warner Robins Air Logistics Center recently issued a request for proposal for production of the P-4C firetruck (the predecessor of which was the P-4 crash firetruck, manufactured by Oshkosh). Procurement plans call for a competitive, two-step multiyear contract award to cover requirements for all military services. Several potential manufacturers inquired by phone regarding a provision in the specification that called for a "power divider" which enables one engine to power both the truck and the pumping apparatus. This feature precludes the necessity and expense of having a separate engine to power the pumps. The concern expressed was that Oshkosh may have proprietary rights to this device. The manufacturers were advised of alternative means of achieving the desired performance which obviates the need to use a "power divider" as such. None of the potential manufacturers who submitted technical proposals expressed any official concern about this aspect of the specification.

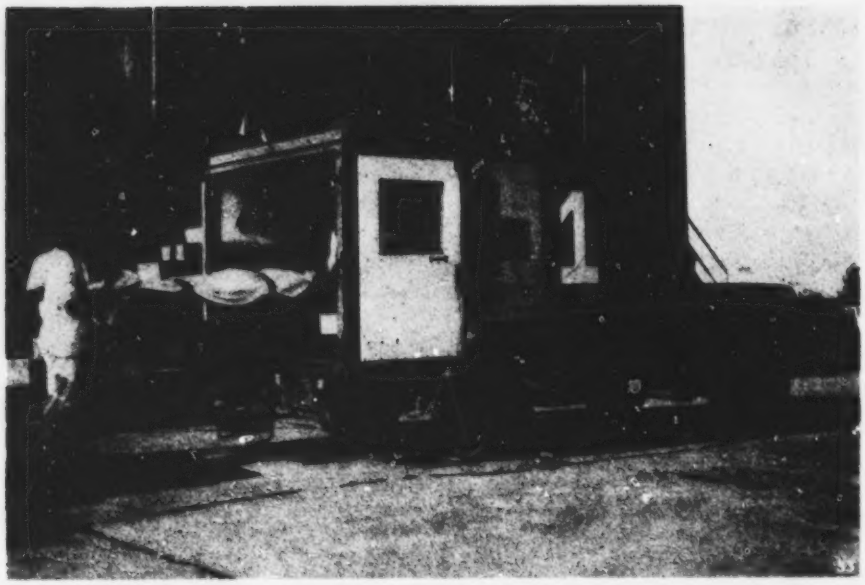


General BOWDEN. In material handling equipment, we are requesting a wide variety in our 1983 budget.

Cargo utility trucks. These are used in a wide variety of circumstances for maintanence, Minuteman sites, truck type that we use on flight lines for aircraft maintenance.

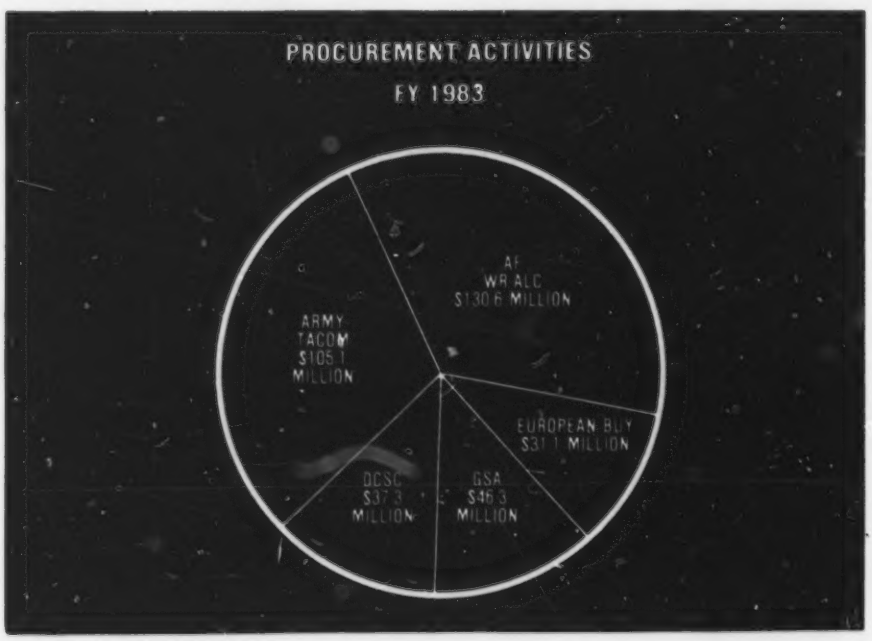
Earth moving equipment.

Also earth moving equipment for repairing bomb craters in air fields. This is a big initiative within the Air Force.

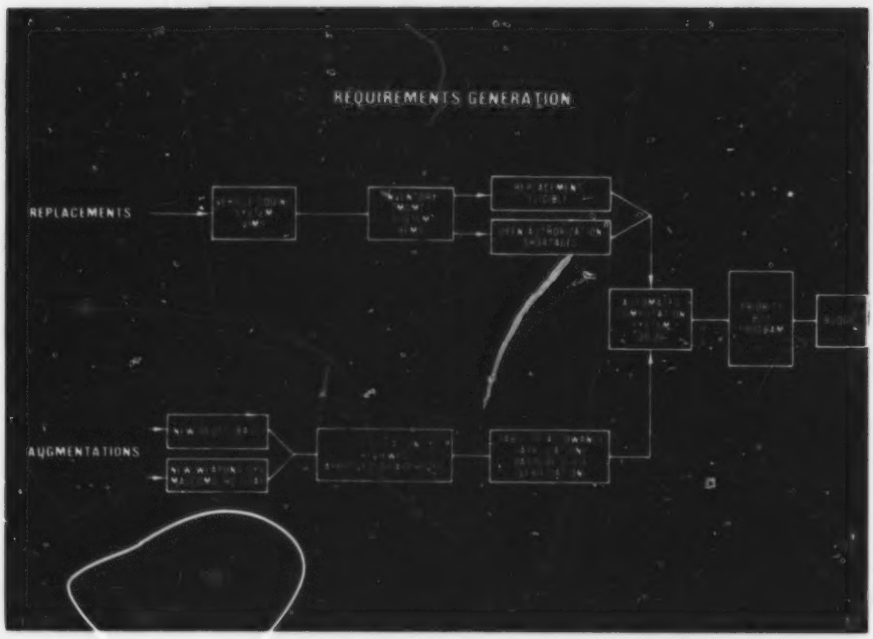


This is the ambulance. Our next buy goes for modular van-type ambulances.

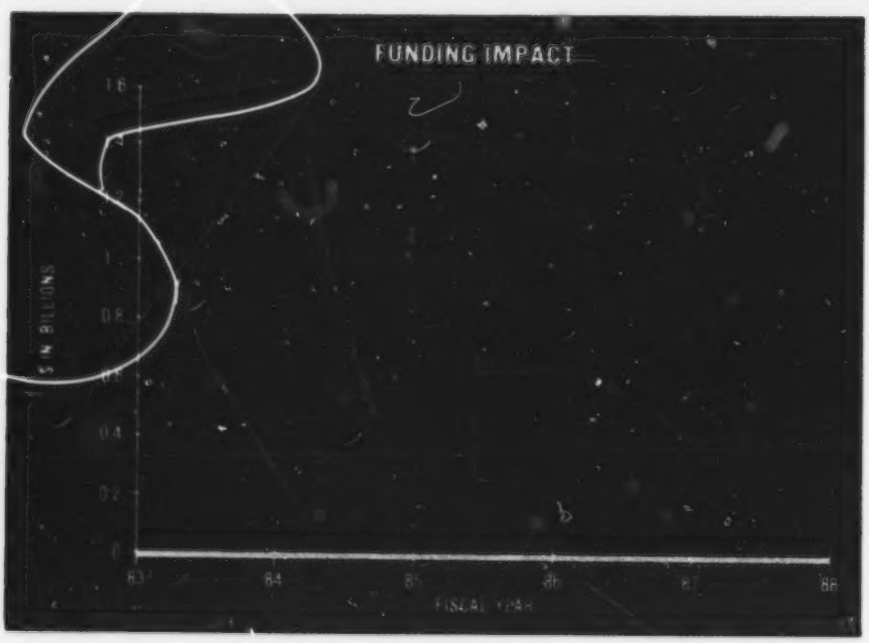
These are the agencies which procure our vehicles. The Army Defense Construction Supply Center in Columbus, GSA, and Air Force at Warner Robins, and as we mentioned earlier, European buys.



This is our funding profile over the next 5 years to get back to an orderly replacement program in the Air Force.



Finally, we do have a requirement for a computation system. We have it automated. Included is our criteria, day-to-day maintenance criteria, how we are using the vehicles, and when they ought to be replaced. There is a way of calculating the requirements when we put in a new system such as GLCM of equipping an E–3 base.



Mr. CAMPBELL. Why does not the Army use that?

General BOWDEN. We have implemented our Air Force program and as far as I know, it is strictly Air Force. But I cannot answer for the other services.

Mr. CAMPBELL. General Skibbie?

General SKIBBIE. I have not really made a study of their program. Ours is based upon the fact that each separate unit we have has a specific, what we call a Table of Organization and Equipment; it prescribes how many men go into that organization, how many vehicles, how many guns, down to the number of blankets that are required.

Then we simply aggregate that to determine how much we require to equip our active and our reserve components. It is straight forward.

Then we go into a calculation of how we expect those items to wear out, how much we expect to be consumed in combat. Then, as we buy, we buy in a prioritized manner. We first buy to equip our forces which would fight first. Then we buy to equip our forces which would fight and deploy later. Then we buy to provide ourselves with war reserves. Then we array that so it is in a prioritized manner, since we readily accept we are never going to get as many resources as we have requirements.

General BOWDEN. That is my last graph, sir.

WRITTEN STATEMENT OF BRIG. GEN. WILLIAM P. BOWDEN

Mr. Chairman and Members of the Committee:

I welcome the opportunity to present the Air Force, Other Procurement Appropriation budget request for vehicular equipment and for munitions and associated equipment.

Today, my purpose is to describe the vehicular equipment program which provides for time-phased qualitative and quantitive fleet improvements, and procures support vehicles for new weapon system acquisitions. I will also discuss the Air Force munitions and associated equipment program; but first, I will address vehicular equipment.

Vehicular Equipment

The FY 1983 budget requests $350.4 million for vehicular equipment to support flight line operations, base maintenance and construction, materials handling, and for general cargo and personnel movement. Requirements in FY 1983 exceed $1.2 billion; however, this budget request emphasizes only the vehicular equipment that is vital to a phased and prudent fleet enhancement program for direct mission support and readiness. Proposed funding levels counter the present unreliable fleet posture where 45 percent of current vehicle authorizations is either unfilled or is filled with assets which exceed replacement criteria. Each individual vehicle requirement is basic to sustaining the Air Force mission in peacetime and during contingency operations.

The Air Force Logistics Command Air Logistics Center at Warner Robins, Georgia is managing efforts to resolve Air Force vehicle deficiencies over the Five Year Defense Plan. Warner Robins Air Logistics Center buys vehicles for which the Air Force is the prime user, for example, aircraft refuelers and loaders. The General Services Administration buys our commercial vehicles rated 10,000 pounds gross vehicle weight (GVW) and below. The Army Tank and Automotive Command (TACOM) buys larger commercial vehicles and those of military design. The Defense

Construction Supply Center buys selected construction and material handling equipment.

For budget purposes, the Air Force vehicle fleet is divided into six major categories as indicated in the following table.

VEHICULAR EQUIPMENT

($ in Millions)

	FY 1982	FY 1983	FY 1984
Special Purpose	103.0	86.3	61.6
Fire Fighting	12.7	5.1	23.8
Materials Handling	54.1	45.4	55.0
Cargo-Utility	103.2	123.9	187.4
Passenger Carrying	19.2	28.7	21.8
Base Maintenance	39.1	60.9	58.5
Totals	331.3	350.4*	408.1

*Total does not add due to rounding

In the special purpose category, the FY 83 budget request contains $86.3 million. Of this amount, $34 million are required to exercise the third year of a three year multi-year contract for the R-9 aircraft refueling truck. This represents the largest dollar item in the vehicle budget. The R-9, along with aircraft and flight line equipment tow tractors, constitute the majority of the special purpose category of our vehicle fleet and are critical to our ability to generate aircraft sortie objectives.

Funds in the amount of $5.1 million are requested for procurement of fire fighting equipment. Funds will buy flight line and structural fire trucks and fire extinguishers which are vital to the protection of Air Force Weapon Systems and Real Property.

Adequate and reliable materials handling equipment (MHE) critical to the rapid onload and offload of strategic and tactical airlifted war material is imperative. We are requesting $45.4 million for MHE procurement. Past mobilization exercises have

confirmed shortfalls in our MHE capability and highlight the need for additional MHE to support the massive airlift of forces within the first crucial days of a military force projection. In addition to aircraft loaders and forklifts, the materials handling equipment category includes forklifts and tow tractors for use in warehousing and marshalling operations.

Funds in the amount of $123.9 million are included in the FY 83 budget request for Cargo Utility Vehicles. The cargo utility category consists of pickup trucks, dump trucks, truck tractors, wreckers and several type trailers. Some vehicles in this category are military design (M-Series) vehicles. Cargo utility vehicles are the backbone of the fleet, essential to our transportation and distribution systems. The M-Series vehicle enhance our warfighting capability by equipping tactical communications and other mobile units with vehicles compatible with and supportable by the Army in forward combat locations. This category also includes vehicles critical to Air Base Defense and in countering terrorist activities.

The base maintenance and construction equipment category includes $60.9 million for rapid runway repair (RRR) vehicles, Red Horse construction equipment, aircraft runway and street sweepers, cranes, excavators, front end loaders. These roads and grounds maintenance vehicles are necessary to the daily operation of every Air Force installation. Runway sweepers reduce foreign object damage (FOD) to aircraft engines, front end loaders are necessary for road and runway repair and snow removal, and excavators are essential for earthmoving projects.

The passenger carrying vehicle category contains $28.7 million for various size buses, ambulances, and sedans and station wagons. Buses are essential in providing crew transportation and other group transportation. Ambulances provide a key element in medical services, and light passenger carrying vehicles are used for taxi services, airdrome operations, and base fire marshall transportation.

This concludes the vehicular equipment discussion. The next area to be addressed is the Air Force Munitions and Associated Equipment Program.

The Air Force Munitions and Associated Equipment Program includes all munitions and related equipment except for guided missiles. The program encompasses rockets; small arms and aircraft cannon ammunition; bomb ejection and engine starter cartridges; nuclear bomb support equipment; guided and unguided general purpose bombs; anti-armor, anti-material, and anti-personnel cluster munitions; air delivered mines; chemical munitions; explosively ejected chaff; infrared countermeasures and illumination flares; aircraft tow targets; bomb and dispenser fuzes; machine guns and grenade launchers; several types of demolition explosives; and the related specialized test, handling equipment. These items range from small arms ammunition costing pennies a round to complex remotely guided bombs costing over $150,000 each.

All munitions requested in FY 1983 are for the Tactical Air Forces. The remaining one percent of the funding is for support of service-wide equipment previously procured in this appropriation. The majority of the munitions requested are to build our war reserve material (WRM) stocks. The remainder are for peacetime training of air and ground crews. Over 90 percent of the training munitions funding is for aircrew training items to acquire and maintain combat readiness.

This year's request continues the initiatives begun last year in the FY 1981 Supplemental and FY 1982 Amended Budgets to redress the readiness and sustainability shortfalls that exist today. As defined by the Secretary of Defense and the Chief of Staff in their posture statements, redressing these shortfalls is the second most important priority of the Defense Department and the Air Force.

The requests for training munitions provide for full funding of the aircrew training programs without recourse to

drawing from WRM stocks. The reductions from last year's levels of procurements reflect the restoration in FY 1982 of pipeline stock levels and the revamping of training munitions forecasting.

The requests for WRM stocks are required to meet WRM procurement objectives and maintenance of production lines as required by the Defense Guidance.

Our FY 1983 request of $854.2 million is $227 million less than last year's budget. This reduction is due to meeting the short-range WRM procurement objectives set by the Defense Guidance and having restored the pipeline stocks of training munitions. The reductions in these areas more than offset the added funding required to initiate production of new munitions this year. As these new systems transition into full rate production, funding requirements will rise.

The Munitions and Associated Equipment Program is divided into seven major categories as indicated in the following table.

MUNITIONS AND ASSOCIATED EQUIPMENT

($ in millions)

	FY 1982	FY 1983	FY 1984
Rockets and Launchers	1.7	1.9	1.1
Cartridges	480.7	234.3	337.4
Bombs	444.6	440.6	945.4
Targets	13.6	8.4	2.8
Other Items	93.6	122.9	130.8
Fuzes	41.9	37.7	105.8
Other Weapons	4.8	8.6	12.0
TOTAL	1,081.0*	854.2*	1,535.4*

*Totals do not add due to rounding

I will now discuss each of the seven categories in more detail:

Rockets and Launchers

The funds requested in this category are for 2.75 inch rocket warheads and meteorological probes. All individual procurements in this category are less than $900,000 each.

Cartridges

The cartridge category is comprised of small arms and aircraft cannon ammunition, grenade cartridges, explosively dispensed chaff cartridges, smoke cartridges, and stores ejection cartridges for aircraft pylons and bomb racks.

Small Arms Ammunition. The requests for small arms ammunition include 7.62mm blank ammunition for security police training and 5.56mm ammunition for M16 rifle training. The 7.62mm blank ammunition is used in M60 machine guns to provide realistic combat training for security force personnel during their initial training and in annual exercises to maintain their proficiency. The 5.56mm ammunition is used to initially train and annually requalify security forces with their primary weapon.

Aircraft Cannon Ammunition. Funds to buy aircraft cannon ammunition in 20, 30, and 40mm sizes are being requested for both aircrew training and to meet WRM requirements. The 20mm training ammunition is used in F-4, F-5, F-15, F-16, A-7, AC-130, and B-52 aircraft. The 30mm training and high explosive incendiary ammunition is required for A-10 training while 30mm high explosive incendiary and armor piercing incendiary is needed for war reserve stockpiles to support the A-10 aircraft. High explosive incendiary ammunition is requested to support AC-130 gunship training and war reserve requirements.

Grenade Cartridges. Training grenade cartridges (40mm) are required for qualification and recurring training of

security force personnel required to man grenade launchers in base defense roles. Grenade cartridges for Mk 19 grenade machine gun and the M203 grenade launcher are requested.

Chaff Cartridges. The request for RR-136 and RR-170 chaff cartridges is required to build WRM stocks and a small procurement of RR-170 for peacetime training. The RR-136 cartridge is used in the RF-4C aircraft and the RR-170 is used in the A-7, A-10, AC-130, F-4, F-15, F-16, HH-3, HH-53, and MC-130 aircraft to counter radar directed threats.

Smoke Signals. Mk 4 Mod 3 and CXU-3 smoke cartridge are small signals used in BDU-33 and Mk 106 practice bombs to mark the impact point during training missions. The CXU-3 "cold smoke" cartridge is used on target ranges when grass/forest fire potential is high. This cartridge produces a smoke mark nearly equal to the Mk 4 mod 3 without the heat output of the normal cartridge. The Mk 4 Mod 3 cartridge is used for the majority of practice bomb drops where range fire danger is minimal.

Engine Starter Cartridges. The MXU-4 A/A engine starter cartridges provide engine start capabilities for the A-7, B-52, F-105, F-4, and KC-135 aircraft when ground power units are unavailable or during alert launches. The requested funds will provide for peacetime training and operations. WRM requirements have been filled through previous year's requests.

Impulse Cartridges. CCU-43/B and CCU-44/B impulse cartridges are used to eject bombs from bomb racks and to jettison external fuel tanks in emergencies. The CCU-43/B and CCU-44/B cartridges are replacing the ARD 446 and ARD 863 cartridges used previously. The smaller CCU-44/B cartridge is used for light weight external stores drops at low airspeeds, while the CCU-43/B is used for heavy weight stores and high speed aircraft. These cartridges will be

used to replace WRM stocks of older ARD 446 and ARD 863 cartridges which will be used for peacetime training.

Bombs

The largest category of bombs includes general purpose bombs; anti-armor, anti-material, and anti-personnel cluster bombs; air delivered mines; guided bomb kits; practice bombs; chemical bombs; and associated components such as bomb fins and lugs.

Mk 82 and 84 Empty Bombs. This years budget request includes funds for Mk82 and Mk84 empty bombs for aircrew training. These bombs will be filled with concrete to simulate the weight of explosive weapon and are used to insure aircrews are familiar with the response of their aircraft during actual weapons delivery. They also provide inert bomb bodies for training launches of laser guided bomb kits.

Airfield Attack Weapon. After testing several foreign weapons for use in the airfield attack role, the French developed Durandal munition was determined to be the best available foreign runway cratering munition. This year's request for a limited procurement of 350 weapons is the first request for procurement of this interim airfield attack weapon. It is a rocket boosted bomb that can be dropped at low altitude and high speed from F-4 and F-111 aircraft. The weapon has been tested by drops from both aircraft. The weapon uses a small parachute to orient the nose of the weapon downward immediately after launch. After the weapon is oriented downward the rocket motor is fired accelerating the explosive charge to a high velocity to penetrate concrete runways. After passing through the runway, the explosive charge is fired which craters the runway. The Durandal weapon will be purchased from the French manufacturer Matra, since the French government will not approve foreign licensing of manufacture.

Air Inflatable Retarders. The BSU-49 and BSU-50 air inflatable retarders are used to convert 500 and 2,000 pound general purpose bombs to a high drag configuration. These high drag general purpose bombs can be used at low altitudes and at high speeds. The BSU-49 fin is a replacement for the Mk 15 fin for 500 pound bombs, while the BSU-50 fin for the 2,000 pound bomb is a new capability. This year's request is to provide an incremental buildup of WRM stocks and to replace WRM stocks of less effective Mk 15 fins which will be consumed in peacetime training or sold via foreign military sales.

Laser Guided Bomb Kits. Our request for 10,000 laser guided bomb kits includes the initial procurement of the improved laser guided bomb kits that incorporate new design seeker and guidance modules. The improved design allows lower altitude release of the weapon and provides for increased range and accuracy. This redesign extends the original weapon's accuracy into low altitude releases and during poor weather conditions. Two thousand new low level kits will be procured this year.

Both weapons kits are used to convert inventory 500 or 2,000 pound general purpose bombs to precision guided weapons. The majority of the kits are to be procured for WRM stocks with 352 procured for peacetime training. The original design is for use in lower threat areas, in terrain that requires high angle deliveries, and against vertically enveloped targets that do not require the capabilities of the more expensive low level kit. Both weapons use the same laser designators for target tracking. No air or ground based designator systems will require modification.

GBU-15. This year's request for 250 television guided GBU-15 weapons is to provide for a further increment buildup of our WRM stock of this highly capable precision stand-off weapon. The GBU-15 is the most capable guided bomb

available today. It provides the ability to either acquire the target before or after launch providing unparalleled targeting flexibility. The TV data link, incorporated in the weapon system, allows the aircrew to acquire the target after launch and to update the designated target after release prior to impact. The GBU-15 will be used to attack the most heavily defended high priority targets where other weapons would require tactics that would expose the delivery aircraft to high attrition.

Practice Bombs. The BDU-33 and Mk 106 practice bombs are used as low cost simulators for general purpose bombs and nuclear weapons. These small practice bombs simulate the ballistics of the full scale weapons at a fraction of their cost. They can be used on smaller ranges closer to our airfields reducing training costs while providing accurate simulations for assessing aircrew delivery performance and tactics.

Gator Mines. This year's request provides for the first low rate initial production of 250 of the CBU-89 version of the Gator mine system. The Gator mines are members of the family of scatterable mines (FASCAM) developed by the Army for use against armor columns. The Gator air delivered mines complement the Army's artillery delivered and mechanically implaced versions which have already entered production. The CBU-89 is a 1000 pound tactical munitions dispenser filled with both anti-tank and anti-personnel mines that produces an air delivered minefield capable of channeling, delaying, disorganizing, or destroying armored columns. The anti-personnel mines are scattered among the anti-tank mines to delay mine clearance. The anti-tank mines are capable of penetrating the belly armor of all modern tanks. The CBU-89 has also been tested as an airbase closure weapon. It proved to at least double the time taken by recovery teams to repair cratered runways

and can be used in combination with the Durandal to slow enemy sortie production. The CBU-89 has successfully completed initial operational test and evaluation and has been approved for low rate initial production.

Anti-Armor Cluster Munition. The CBU-90 anti-armor cluster munition (ACM) is a 1,000 pound tactical munitions dispenser filled with 48 ACM submunitions. The dispenser is explosively opened, dispensing the submunitions. The individual submunitions are detonated approximately three feet above ground level and form three self-forging fragments that can penetrate the sides of armored vehicles. The 48 submunitions provide an overlapping pattern of fragments propelled at hypersonic velocities. A fourth self-forging fragment is oriented directly downward to penetrate the top of a tank should it land directly on a target. The request provides for low rate initial production of 2,000 CBU-90s.

Aerial Tow Targets

This category funds the towed targets used in air-to-air gunnery training and air-to-air missile firings. The majority of this year's request is for the advanced aerial target system for gunnery training. This target system comprises a tow pod that is mounted on the aircraft, a streamlined container that is deployed on the end of a tow line, and the target visual augmentor which is a mesh tetraplane attached to the streamlined container and carried inside the container until the container is deployed. The system includes an audio scoring system contained inside the nose of the streamlined container that counts projectiles as they pass near the target. The audio score is transmitted to the tow aircraft by each shooting pass at the target. All portions of the target system are reusable until projectile strikes on the tetraplane or streamlined container are beyond economical repair. Only those

parts of the system that are actually damaged need be replaced. This system is replacing the TDU-10 expendable target system.

Other Items

This category includes infrared countermeasures and illumination flares, nuclear weapons trainers and parachutes, explosive chaff packages, spares and repair parts,and modifications of inservice equipment.

Infrared Countermeasures Flares. The RR-119, MJU-2B, MJU-10B and M206 infrared countermeasures flares are used to decoy air-to-air heat seeking missiles away from aircraft. Each flare is designed to mask the heat or infrared signature of the associated aircraft long enough to decoy the missile and cause it to follow the flare rather than the aircraft. The MJU-7B is used with the F-4 and F-16, the MJU-10B with the F-15, and the M206 with the A-7 and A-10 aircraft. All these flares fit in the ALE-40 or 45 modular chaff/flare dispensers fitted to these aircraft. The RR-119 flares are designed for use in the internal chaff and flare dispensers of the F-111 aircraft. All countermeasures flares are being procured for WRM stocks.

Illumination Flares. The LUU-4B illumination flare is used by AC-130 and tactical fighter aircraft to provide night time target illumination. This large, parachute retarded flare is being procured for WRM stocks and peacetime training use.

B-83 Trainer. This year's request for 46 B-83 training weapons provides the final increment of maintenance, explosive ordinance disposal, and load crew training weapons for this nuclear weapons system.

MC-3468 Retard Device. The request for MC-3468 parachute retardation devices for the B-83 weapon system provides parachutes and installation hardware for war reserve weapons and for periodic stockpile sampling. The

MC-1468 is a large, high performance parachute designed specifically for the B-83 application. The parachute system incorporates explosive deployment and reefing action to provide a specifically tailored trajectory and final impact velocity to the bomb. This trajectory allows the weapon to be released at very low altitudes and high speed while providing stable ballistics and low impact velocity.

RR-141 A/L Chaff Package. The RR-141 A/L is an explosive chaff package that is mechanically launched from the F-111 chaff/flare launcher. The explosive charge is initiated as the package is ejected from the launcher and after clearing the aircraft explodes the chaff bundle in the airstream. This year's procurement will provide chaff packages for WRM stocks and for peacetime training.

Spares and Repair Parts. The spare and repair parts requested are for an initial stock of spare parts for weapons, specialized test sets, and handling equipment being requested this year and to replenish spare parts stocks for items procured in prior years.

Modifications. Funds requested for modifications to inservice equipment are primarily required to reduce maintenance costs of older munitions handling equipment by retrofiting more reliable hydraulic systems for over 20 year old systems.

Fuzes

The fuze category includes requests for four general purpose and cluster bomb fuzes.

FMU-81. The FMU-81 fuze request is to provide fuzes for inventory laser guided bomb as well as those laser guided bomb kits being requested this year. These fuzes are required to replace older, less reliable, FMU-26 fuzes that are reaching the end of their useful life and to match procurements of new, additional weapons. The FMU-81 is an impact or short delay electronic fuze that can be used for general purpose bomb in low drag or guided bomb

applications. No outyear procurements are planned since the FMU-112/139 fuzes will be used to meet all future requirements.

FMU-112/139. The FMU-139 common bomb fuze is a joint service (Navy/Air Force) fuze currently in development. Our FY 1983 request is structured to procure 10,000 FMU-139 fuzes currently scheduled to be available in FY 1983. This 10,000 fuze procurement is a low rate initial production option included in the development contract negotiated by the Navy as lead service. The option will be exercised in January 1983 if the fuze is successful in meeting development milestones. If the FMU-139 fuze development is delayed to the point that the option cannot be awarded in FY 1983, the Air Force intends to procure the FMU-112 fuze to meet critical requirements.

Both the FMU-139 and the FMU-112 fuzes meet the same requirements for an impact or short delay electronic bomb fuze for high and low drag general purpose bombs. The FMU-139 fuze will also meet Navy requirements and is estimated to cost $300 less. The FMU-112 fuze has the single advantage of being in production now, and authority to procure this fuze is requested only as a back-up in case FMU-139 development delays should significantly delay that fuze's production.

This plan is based on two factors, previous Congressional direction not to procure FMJ-112 (awaiting availability of the FMU-139) and the need to provide a modern fuze for high drag general purpose bombs and guided weapons. This need has been stated by the Chief of Staff of the Air Force in his testimony to the House Armed Services Committee.

FMU-113/B. The FMU-113/B proximity fuze is a general purpose bomb fuze used to explode bombs immediately above ground level. The proxmity fuzed bomb creates a blast wave and fragments of the bomb case that greatly enhance the

effectiveness of general purpose bombs when used against unprotected aircraft, personnel, vehicles, and unreinforced structures. This fuze replaces the impact fuze and fuze extenders. These were previously ineffective in soft terrain and imposed aircraft carriage and delivery limitations.

Mk 339 Mechanical Time Fuze. This fuze is requested to provide a low altitude capability for inventory CBU-52, 58, and 71 weapons. The Mk 339 is a mechanical time fuze that opens the dispenser at a present interval after the weapon is dropped from the aircraft. It is a less expensive and more reliable alternative to the FMU-26 fuze previously used for this application. Procurement of this fuze is required to match inventories of CBU-52, 58, and 71 anti-material/anti-personnel cluster bombs to be employed using low altitude deliveries.

Other Weapons

The other weapons category includes handguns, machine guns, and grenade launchers. The items in this category are the only items in the Air Force Other Procurement Appropriation that required authorization in the past. This year's requests reflect the continuation of the program initiated last year to improve the capabilities of our air base defense forces in response to increased terrorist threats and the initiation of the joint service program to replace current handguns with a standardized 9mm pistol.

Airbase Ground Defense Weapons. The 342 M203 40mm grenade launchers, 114 M60 machine guns, and the 161 Mk 19 Mod 3 40mm grenade machine guns provide the high volume and suppressing fire coverage for Air Force security forces defending overseas airbases and nuclear weapons storage facilities. These weapons are part of the overall program to improve the equipment for these airbase defense forces to defend against terrorist attacks or lightly armed military forces likely to threaten rear areas in a general war.

9mm Handguns. The 11,500 9mm handguns requested are the

first year's planned procurement for the Air Force of the joint service common handgun. The Army is lead service.

The Munitions and Associated Equipment Program is a keystone of the Air Force effort to increase the readiness of our combat forces from the low levels of the recent past and provide for the most rapid, prudent growth of our WRM stockpile to sustain our tactical forces in combat with the modern, effective weapons necessary to meet current and near term future threats to our national security. Without these items, the billions of dollars spent in equipping and maintaining the Air Force will have been largely wasted, since they will have to face an enemy with too few modern munitions and insufficient training to make effective use of their capabilities. The need for ready forces has been clearly stated by the President, Congress, and all senior civilian and military leaders. The requirement for sustaining stocks of modern munitions and the training munitions necessary to develop and maintain the capability to employ these weapons and their delivery systems is paramount to making that ready force. I recognize that many of the items in this request are neither glamorous nor are they all ideal. Each is required to meet the goal, each is a part of the best combination we could find to meet the objective of maximum effectiveness at the minimum cost. None are the ultimate in effectiveness, few are the cheapest possible. They all are compromises to one degree or another. We have spent many months agonizing over the tough decisions necessary. Some say wait for new technology to provide less expensive or more effective answers, others say buy more of what is available today. The program we have presented to you is neither of these extremes; it provides a balance of new technology and maintains the production base for current munitions in the most prudent program we could devise backed by the most rigorous and sophisticated analysis of all the needs that must be met.

Mr. STRATTON. Thank you, General.

The only thing that bothers me—and that is something that Mr. Campbell has been touching on—I think your first slide indicated that virtually half of your vehicles are obsolete, that you are going to replace them.

It looks to me, I get the impression—and this is not the first time that I had it in these hearings—that since this looks like a good budget year for the military, you are going to try to get as much as you can.

It would seem to me that we ought to be able to continue using some of these so-called obsolete, overaged vehicles rather than spend half of our time replacing what you have. You are not going to get the money from Congress that is in the budget, I am afraid. I think some of these requirements may be just a little overdone.

General BOWDEN. Sir, I would offer this view, that the way that we have laid out our program over the 5 years, the 1983 budget is not as much as we will be asking for in future years—$350 million, then moving up to about $600 million.

So, we are trying to attack the condition in an orderly manner. Right now we are working ourselves to death extending vehicles, doing maintenance on vehicles that are overage. That is a way of life.

We will continue to do that until we get the money to make an orderly replacement. But I guarantee you, the O. & M. dollars that it takes to continue to operate older refueling trucks or pickups costs a lot more in the long run than buying them when you should. We have lots of data to back that up.

We are trying to be very orderly and accepting the risk over the 5-year period.

General SKIBBIE. Mr. Chairman, can I make a statement?

Mr. STRATTON. General, yes.

General SKIBBIE. With regard to the shortages, let me assure you, we have not inflated our requirements. If you look at history you will find that in the 9 years preceding 1981 the Army had $70 million per year to buy tactical vehicles. You can calculate that it requires $600 million per year to merely replace the tactical vehicles that we have, based upon the current age criteria.

So, as a simple matter of arithmetic we did not spend the money in those years for a variety of reasons. Therefore, we are now in the situation that I displayed. We are dramatically short of equipment. In addition to being short it is overage.

Mr. CAMPBELL. General, excuse me. I think the chairman's point is, we clearly question the overage criteria that is used and, absent any quantitative data that you can support, General, for replacing vehicles it seems to me the fact that it is 10 years old does not necessarily mean it has to be replaced.

General SKIBBIE. Absolutely, we fully accept that. However, even if you discount any overage vehicles, there was not one category there that I showed where we were higher than 72 percent of requirement.

That means you cannot equip the forces that you have in being. If you go out to the forces command right here in the United States you will find that they have units that do not have their full complement of equipment, particularly trucks.

When the four-star commanders come in to talk to you, if you question them you will find that is one of their major complaints, the shortage of tactical vehicles. It directly relates to readiness. Just because it does not shoot, or fly, or explode, does not mean it does not relate to readiness—tactical vehicles and nontactical vehicles indirectly.

Our requirements are not inflated simply because we thought it was a good year.

Mr. STRATTON. Thank you very much, General.

We will put the statements that will have to do with the ammunition procurement into the record without objection.

[The following information was received for the record:]

COMPETITION IN OFFSHORE PURCHASING OF VEHICLES

If I understand your statement, you indicated that competition will most likely not result in an American manufacturer being selected. You also said that competition may lead to other non-host nations being selected which would complicate the vehicle maintenance problem and reduce readiness.

Question. What if you just had competition between the host nation and U.S. manufacturers? [See page 889.]

Do you have any data that would suggest which non-host nation would win most of the time?

"TWO-WAY" STREET DEFENSE PURCHASING

Mr. Bernard, in your statement you refer to the fact that the "Two-way" street concern is one of the reasons OSD would like to purchase vehicles from our allies in NATO.

Question. In terms of Defense items, how much did we purchase from our NATO allies in fiscal year 1981 and fiscal year 1982 and how much did they purchase from us? In other words, what is the balance of trade for defense related purchases? [See page 893.]

VEHICLES

Mr. MCCURDY. Do you have any data that suggests that the host nation would win most of the time, or a non host? Is there any experience here? Tell me about the experience.

I apologize for coming in right at the middle of your statement and I know the other gentlemen will follow with more details. But what kind of cars, or automobiles, vehicles, are we talking about? I mean, what portion of these are actual automobiles or pick-ups, off-the-shelf types of things?

ANSWER. Yes. If the competition were held in Germany, I would expect Japan to win. On a fiscal year 1981 procurement of 2,600 trucks, the Japanese bid was $1,200 per vehicle lower than American proposals.

SMALL UNIT SUPPORT VEHICLE (SUSV)—ARMY

QUESTION. Why do we need them?

General SKIBBIE. The SUSV is urgently needed to fill a requirement which cannot be fully met by any other existing Army vehicle. It will improve the combat effectiveness and capability of troop units operating in northern and mountainous regions by transporting the required platoon pack of supplies in all season terrain and during severe climatic conditions. At the present time, the operational load for any infantry platoon ranges from 2,000 pounds to 3,000 pounds in the winter to 600 pounds in the summer. The winter load must be backpacked and/or transported on a hand-towed sled (ahkio). The summer load must be totally backpacked.

QUESTION. What do they replace?

General SKIBBIE. The SUSV does not truly replace anything because there is no longer any vehicle in the Army which meets the SUSV requirement. The two tracked cargo carriers, M116 and M29, that the Army has previously used in the SUSV role, have been out of production for at least 15 years. However, several alternative means of transportation currently being used in the SUSV role are: hand towed sleds (ahkio), snowmobiles, ¼-ton trucks, 2½-ton trucks, 1½-ton trailers, and helicopters. These transportation systems are inadequate and ineffective because: (1)

the sled must be towed by hand, which limits the units mobility; (2) snowmobiles lack cargo capacity; (3) trucks and trailers have very limited mobility in deep snow and summer muskeg (swamp); (4) helicopters are limited to 2 to 3 hours of operation even when near-perfect arctic winter flying conditions exist.

QUESTION. Are there any alternatives?

General SKIBBIE. No sir. We have extensively explored the available means to meet the operational need and we could find no other alternatives which can provide the capabilities to meet the SUSV requirement.

Mr. STRATTON. Why have you decided to buy the M.A.N. of Germany, 10-ton truck?

ANSWER. In October 1980, a contract was signed with Maschinenfabrik Augsburg-Nuernberg (M.A.N.) of Germany for 15 10-ton trucks to support the Army Pershing II (PII) and the Air Force Ground Launched Cruise Missile (GLCM) (10 for Army, 5 for Air Force). The contract contained an option for additional vehicles which was to be exercised if the vehicles met service/performance requirements and maintained reasonable cost. After M.A.N. delivered the test vehicles on-schedule during July, August, and September 1981, initial production testing began. Based on the favorable results of testing, an option for 104 M.A.N. trucks (Army and Air Force) was exercised in December 1981. Additional options will be exercised in December of succeeding years to meet PII and GLCM system requirements (for an eventual total of 468 trucks). The M.A.N. vehicle was selected to support the PII and GLCM based on its availability to meet urgent Theater Nuclear Force (TNF) Modernization Program requirements and standardization with 10-ton trucks in the German Army. Vehicle logistics support is as follows:

(a) Services provide organizational and direct support maintenance.

Contractor provides higher level support and repair parts supply.

(b) U.S. DOD and FRG Ministry of Defense (MOD) Memorandum of Agreement (MOA) insures priority support from contractor.

The balance of the Army's worldwide 10-ton truck requirement will be met by the Heavy Expanded Mobility Tactical Truck (HEMTT) produced by Oshkosh Truck Corporation, Oshkosh, Wisconsin. M.A.N. vehicles will be used to support the PII and GLCM systems in USAREUR and were selected to take advantage of standardization and interoperability with trucks in the GE forces.

Mr. STRATTON. How many 10-tons will be purchased from M.A.N. throughout the program, and what is the cost?

ANSWER. The Army and the Air Force will buy approximately 468 M.A.N. trucks at a cost of $105 million over the life of the M.A.N. contract. This total includes procurement plus logistics and support costs.

Mr. STRATTON. You indicated that cost reduction is one of the reasons OSD would like to buy vehicles from our European allies. How much will we save?

ANSWER. We estimate that procurement costs would be approximately equal although shipping costs would be added if the procurement was from CONUS. The real savings will come from life cycle costs. We will require fewer mechanics, spare parts, less training etc. However, these savings cannot be quantified at this time. Additionally, since repair and spares are readily available in country we anticipate substantial increases in vehicle operational availability.

Mr. STRATTON. However, without considering the average cost of maintaining a type of vehicle and without considering the conditions under which these vehicles are used, how can you say that it is economically desirable to replace those vehicles because they have outlived their usefulness?

ANSWER. The replacement decision on a vehicle as with other equipment must take into consideration age, reliability, cost of maintenance and operational use. Otherwise, equipment would be kept on board even through its reliability and cost of operation and maintenance exceeded the amortized costs of a new vehicle.

Mr. STRATTON. Would it be useful to conduct an economic analysis to identify the 'point of diminishing' returns before we spent money to replace vehicles?

ANSWER. The Air Force has in place a system that provides data to permit the determination of economic replacement points for vehicles. The Army is evaluating the applicability of the Air Force procedure for use by the Army. Additionally, the Army is evaluating the advisability of complementing the Air Force system with a sample data collection effort. All of the Services use the DOD standards for useful life of Non-Tactical vehicles. In the case of tactical vehicles such as the 2½- and 5-ton truck the Air Force system projects shorter economic lives than that currently used by the Army—12 versus 15 years in the case of the 2½-ton and 15 versus 20 for the 5-ton.

The current Air Force system adequately addresses the question of economic life and it is believed that the current Army initiative will provide data that also more

clearly address the economic life of tactical vehicles. Beyond the question of economic replacement, the issue of useful life as it relates to readiness is also included in our assessment. We know that bodies rust out, rubber rots and deteriorates, and metal fatigues. Our experience with vehicles of advanced age causes us great concern as to their dependability and reliability should they be subjected to the stress of combat.

Mr. STRATTON. We will stand adjourned until 2 o'clock this afternoon.

Thank you very much, gentlemen.

[Whereupon, at 12:35 p.m. the subcommittee adjourned, to reconvene at 2 p.m. on the same day.]

AFTERNOON SESSION

DEPARTMENT OF DEFENSE TACTICAL COMMUNICATIONS PROGRAM

The subcommittee met at 2:10 p.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

This afternoon we have as witnesses Mr. Donald C. Latham, Deputy Under Secretary for Communications, Command, Control and Intelligence, and Maj. Gen. Robert J. Donahue, U.S. Army, Director of the Joint Tactical Communications Office—TRI-TAC. We will receive testimony from these two witnesses on the Department's tactical communications program.

Since this is the first year the committee has examined tactical communications, I have requested an overview of the TRI-TAC program to include a description of the equipments and the funding involved. Because the TRI-TAC program is developing communications equipment for all services, it serves as a good example of the types of equipment contained in the communications and electronics line items of each service's budget. It is by no means, however, a major portion of any service's effort in communications.

The communications and electronics lines of all services total approximately $5.73 billion in fiscal year 1983 and the TRI-TAC program is only a small portion of that total.

Command and control of our tactical forces is as important as control of our strategic forces. Our tactical forces are greatly outnumbered, of course, and as a result robust and capable command and control systems can be force multipliers. With effective communications systems our numerically inferior forces could be massed and directed to critical points in the battle and their effectiveness substantially increased.

The large defense budget has attracted a good deal of attention and considerable criticism since it was first proposed. There is no doubt in my mind, after watching the Soviets build their forces over the past 10 to 15 years, that our efforts are absolutely vital to the future of our Nation.

However, Congress still has to be assured that we are getting the most defense capability for our tax dollar. In that regard, Mr. Latham, the subcommittee must be assured that proper attention has been paid to the standardization and joint development and use of equipments when appropriate.

We had testimony this morning that we still could not communicate with our allied forces in NATO and I think we would appreciate some elaboration on that particular subject.

Because of the nature of this subject matter, we will sooner or later go into executive session. However, we need the support of a majority to make that move. We are in the process of trying to get that majority assembled for the requisite vote. It is my understanding that both the witnesses could proceed for enough time for us to collect the appropriate votes and in that case, Mr. Latham, perhaps you would be prepared to present your statement on an unclassified basis until we get such majority to go into executive session.

STATEMENT OF DONALD C. LATHAM, DEPUTY UNDER SECRETARY FOR COMMUNICATIONS, COMMAND, CONTROL AND INTELLIGENCE, DEPARTMENT OF DEFENSE

Mr. LATHAM. Yes, sir, I will be glad to do so. I have some viewgraphs, sir, and I thought maybe we could start with that and do an overview of the command, control and communications area, and then have General Donahue talk about TRI-TAC, sir.

Mr. STRATTON. Fine.

Mr. LATHAM. What I would like to do, then, is stress this afternoon the theater and tactical communications and command control area, but I will try and address in the opening here a few of the top-down initiatives that we are working.

LONG-TERM TRENDS IN NATIONAL DEFENSE

First of all, sir, as you so eloquently just stated, the Soviet military momentum is not in any way slowing down. In fact, it is actually continuing its massive effort of building, and building. Our disinvestment in the past has really hurt us, especially in this particuar area, this mission area.

So, what we are striving for is 7 percent real growth a year which, we understand and have to accept, is driven by the recovery of the economy. We are attempting to rectify the strategic balance with the strategic modernization program, coupled with a theater nuclear forces and conventional forces modernization program to strengthen and stabalize our deterrent posture across all levels of possible conflict.

I would like to show you today what we are doing in the so-called C^3 area—with emphasis in tactical systems.

GENERAL PRINCIPLES, COMMAND, CONTROL AND COMMUNICATIONS [C^3]

If you look at some general principles that we use as guidelines for this C^3 area, first of all, it is unique and different from buying a tank, or a missile, or an aircraft, in that C^3 is very much a part of the commander. It has a command personality.

Our command and control systems have to be tailored into the design of the weapon system. Also people and procedures dominate C^3 systems. If the system is going to fail, in many cases it turns out that we have inadequate procedures or poorly trained people. In some of our exercises we find that to be the case. The equipment works quite well but the people do not, sometimes.

We are working very hard for a survivable and enduring system. That is the theme of what we are trying to do in the strategic forces and in the strategic C^3. That carries into the tactical area, and that really drives the system architecture.

You will see, we are opting for mobility and things of that nature to have a survivable and enduring system. Jam resistance and secure communications are vital and we will talk quite a bit about that today. Today you will find that in the forces, we have very little antijam capability in our communications links—way too little.

You mentioned interoperability and standardization. That is an area we are working quite heavily on and have a formal procedure for working out interoperability across the services and in the NATO. We can comment in some detail on that later.

As far as my mission area responsibility in C^3 electronic warfare and C^3 countermeasures are also integral to the actual weapons and systems that they serve. We try to look at that as a total package.

THE EVOLVING BATTLEFIELD

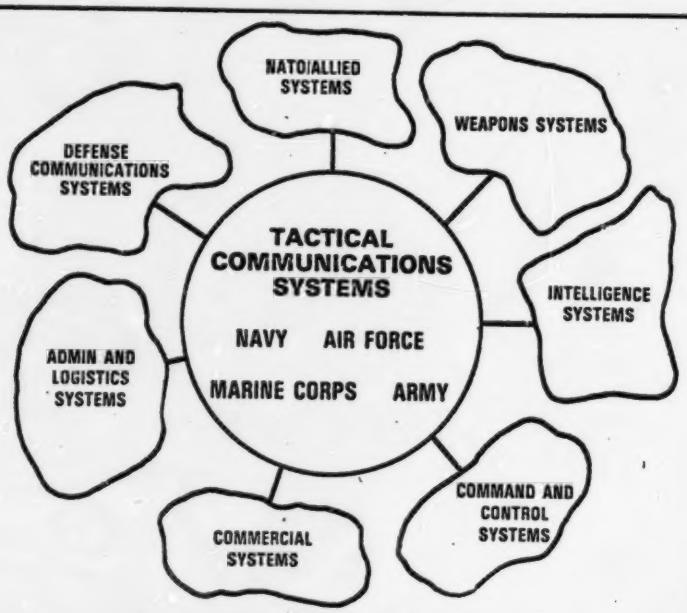
The battlefield, as you know, is evolving rapidly into a very different kind of battlefield than we saw in World War II, Korea, or Vietnam. Some of the new munitions that are coming on board, such as precision-guided munitions, require special types of sensors, and the world of incredible sensors as I call them here, is really upon us.

These sensors can image the battlefield day, night, in all weather. They develop large amounts of data. They drive the command and control system, then, to react much more rapidly and with much more data to be able to handle all this than we had before. In addition, there is electronics everywhere.

IMPACT OF TECHNOLOGICAL CHANGE

That gives us both an opportunity and a problem. The technology impact, then, is that range, speed and coverage of weapons is increasing, and our capability, then, must respond to that with rapid communications command and control to control those sensors.

TACTICAL COMMUNICATIONS INTERFACES

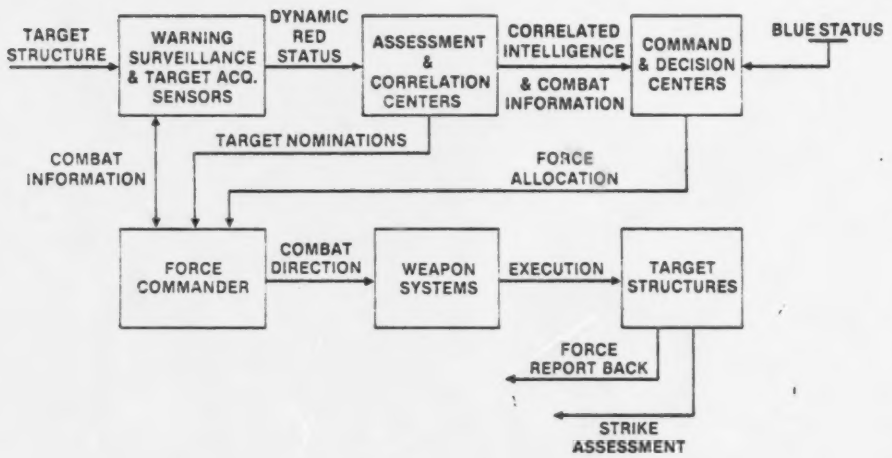


Now, if you look at the interfaces that the tactical world has, it is actually more complicated than the strategic world when you try and look at all the different things they have to serve.

Embedded, then, in the services, are the tactical communications systems. They must serve all these different masters, and especially, as you mentioned, up here we have to interface with friends—particularly in NATO—and with differences in equipment across all those lines we somehow have to bridge that gap. That is a hard thing to do.

But this is the kind of world we live in and we understand that, so we are trying to make it happen with the least cost.

OFFENSIVE TACTICAL C³I OPERATIONS



If you take a very simplified view of how offensive tactical operations should occur, this is the way the world might be. We have today a series of sensors that will perform warning, surveillance, and target acquisition, both in the strategic side and on the tactical side.

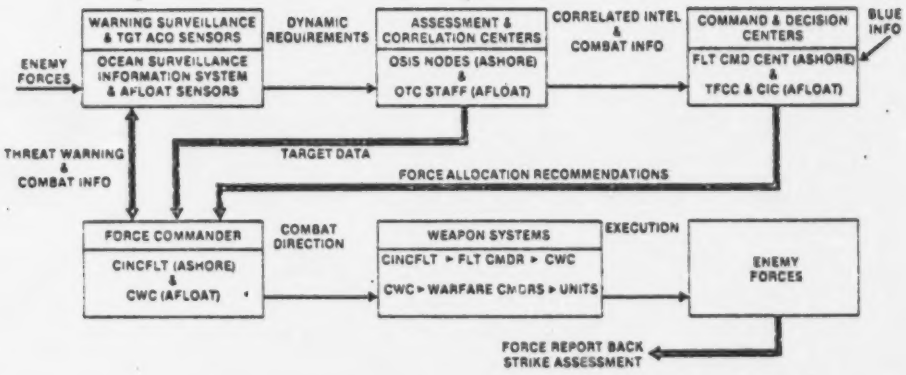
These sensor systems, then, develop dynamic "red status," in other words, what is the other guy doing, where is he, where is he going, and things of that nature. This information, then, is put into what we are calling assessment and correlation centers. You have probably heard the word tactical fusion center, which is sometimes used for that. I would rather call them assessment and correlation centers.

They provide correlated intelligence and what I call combat information to the commander who then allocates forces to the force commander. At the same time, in case this link is taking too long and there are decisions that have to be made rapidly, some of these sensor outputs go directly to force commanders so that they can make instantaneous tactical decisions and move forces, provide combat direction to weapons systems and so on.

For example, a radar system that might be scanning and finds a target, that can direct a precision-guided munition would tell that to a force commander and the weapon system would execute it.

In many cases, though, this information is correlated with other types of information, the target nominations are given to the force commander, he executes, we have a report back, a strike assessment, and the circle gets closed.

NAVY C³I


WARNING SURVEILLANCE & TGT ACQ SENSORS
OCEAN SURVEILLANCE INFORMATION SYSTEM & AFLOAT SENSORS
ENEMY FORCES
DYNAMIC REQUIREMENTS
ASSESSMENT & CORRELATION CENTERS
OSIS NODES (ASHORE) & OTC STAFF (AFLOAT)
CORRELATED INTEL & COMBAT INFO
COMMAND & DECISION CENTERS
FLT CMD CENT (ASHORE) & TFCC & CIC (AFLOAT)
BLUE INFO
THREAT WARNING & COMBAT INFO
TARGET DATA
FORCE ALLOCATION RECOMMENDATIONS
FORCE COMMANDER
CINCFLT (ASHORE) & CWC (AFLOAT)
COMBAT DIRECTION
WEAPON SYSTEMS
CINCFLT ▸ FLT CMDR ▸ CWC
CWC ▸ WARFARE CMDRS ▸ UNITS
EXECUTION
ENEMY FORCES
FORCE REPORT BACK STRIKE ASSESSMENT

Now, if you look at the Navy, we have a very similar system. In fact, this system is very much in place today and it works. The Navy surveys enemy forces. With their warning, surveillance and target acquisition sensors they have a set of their own on board, as well as links to national and what I call global centers to provide information to the afloat commander.

They input data into the shore and to the staff afloat where they have assessment and correlation centers today, for example. This information, then, is given to the command and decision centers, both ashore and afloat, combined with what the "blue status" is, just like we did in the Army and Air Force tactical case, and through the loop to execute with enemy forces.

Each one of these boxes can be expanded, so to speak, and you can look at the command control and the communications assets that it takes to perform each one of these functions. That is what we have to be able to address as a total system problem.

Mr. STRATTON. That is what?

Mr. LATHAM. C³I, sir.

Mr. STRATTON. C³I?

Mr. LATHAM. Yes, sir. Into this box comes the status of enemy forces by a variety of means. So, this can be tactical intelligence systems, national intelligence systems, or what I call combat information, such as the radars.

Mr. STRATTON. What does the "I" stand for?

Mr. LATHAM. Intelligence in the traditional sense of intelligence. I have used the words correlated intelligence and combat information here to make some distinction between classical intelligence and combat information. That brings up the type of information that the new sensor systems can develop today.

For example, we have radars that are coming along that will actually be able to image the battlefield and tell you a tank from a barn; or a moving tank or a column of tanks from just a tree line. That would be called combat information in my jargon, as opposed to classical intelligence.

Mr. STRATTON. Before you go on, what do you mean by classical intelligence?

Mr. LATHAM. Well, most people would view the classical intelligence process as something that happens not necessarily right at the level of the operational commander, it is set off somewhere and some guys have some mysterious things they do. They bring information into the command center—be it from a set of strange sensors or from a human intelligence source, or whatever.

I classify combat information as information that is developed from such things as radars or an imagery system that can develop near real-time assessment of what you see in front of you.

Mr. STRATTON. That is pretty much what happens in the CIC on a ship.

Mr. LATHAM. Yes, sir, exactly. In fact, the new Aegis cruiser is a very, very interesting thing to see because the CIC there now is one like you have never seen in any other Navy ship. It actually has the capability to do this kind of close-loop function with a variety of intelligence and combat information from on-board, and other information coming into the ship. They can correlate it and display information to the OTC to enable him to run the entire air battle right from that ship.

In fact, they have some large multiscreen displays, three of them, up there for the commander to actually operate. A two-star can go sit there and run the entire air battle.

C³ IMPLICATIONS, THEATER AND TACTICAL SYSTEMS

WIDE RANGE OF POTENTIAL CONFLICTS; ARCHITECTURE DRIVEN BY UNIQUE THEATER ASPECTS

Europe: High threat; NATO and interoperability; and nuclear weapons.
Pacific: Geography; joint operations; and North Korean capabilities.
"Third World": Small scale crises; Southwest Asia; and impact C³ with forces.
Strong influences: Unique service interests; joint operations; allied views; IFF; A/J Comms; and interoperability.
Lack of survivability and endurance.

Let me try and mention a little bit about some of the C³ implications for theater and tactical systems. The thing we are faced with is a very wide range of potential conflicts that really stress the system in terms of the geography you have to fight over, the types of forces you might meet, and so on.

So, the architecture, or how we would construct the system, is really driven by some quite unique theater aspects. For example—and these are just examples in Europe, you are quite familiar with this, whereas in the Pacific of course it is somewhat different—there is very expanded geography, there are a lot of joint operations here as well. For example, the North Koreans have a very formidable capability. Going in there and reinforcing and coping with that threat drives a given kind of force structure and supporting C³.

In the Third World so far perhaps a different set of crises, but also demanding in the way you would be able to handle the forces.

If you look at the influences, then, on this, there are some very unique service interests. There are the joint operations aspects, and of course the allied views—interoperability is key here. IFF, how do you do that across that line, how do you tell a German aircraft from a British, from an American and talk to each other?

Importantly, we will talk quite a bit about today antijam communications. The problem we are faced with across all of these, frankly, is really the lack of survivability and endurance. That is one of the major efforts, as I see it, we are trying to address.

CHARACTERISTICS OF A SURVIVABLE AND FLEXIBLE COMMAND AND CONTROL SYSTEM

JAM RESISTANT SECURE COMMUNICATIONS

High data throughput; non-nodal; complete connectivity; provide both data and voice; low probability of exploitability; and active and passive operation.

ACCURATE FORCE POSITION DATA (FRIENDLY AND HOSTILE)

Relative navigation; and grid lock.

SURVIVABILITY AND ENDURANCE

Hardening to nuclear effects (EMP); mobility/deception; and reconstitution.

What are some characteristics of a survivable command and control system for tactical use, let us say? First of all, it has to be resistant to jamming. We have to be able to communicate when he turns on some sort of a jammer. We have experienced simplified jamming in Vietnam. We have never really been into something like the Israelis were, but we are going to be if we ever get into a conflict.

You ought to have these kinds of characteristics here in our modern types of communications systems. For example, not single node if it goes out, takes the system out; a nonnodal approach, so-called.

We need both voice and data information for the tactical world. We would like very much to know where our forces are. So, force data, position data, and navigation and grid-lock, are very important—again, the issue of survivability and endurance.

PROBLEMS WITH THEATER/TACTICAL C³I

Poor physical and electronic survivability/endurance: virtually no A/J; static mentality.
Cross-service and allied interoperability: In A/J modes; with COMSEC.
Proliferation of battlefield ADP.
Need for sensor correlation and assessment capability.
Voice vis-a-vis data.
Poor IFF: Air and ground.
Advent of "incredible" sensors: How to deal with them; limit demands.

So, with those as the general theme, these are some of the problems we face today, as I see them, and there are corrective actions. We will talk about those.

We really do not have as much survivability, both physically and with electronics, as we would like to have.

The cross-service and interoperability in the antijam modes of operation present a challenge. I will speak to what we are trying to do about that later on. But we are working that problem. As an example, just to stop for a second, we have a memorandum of understanding with Germany to test and interoperate our SINCGARS new VHF frequency-hopping radio with their new version of a frequency-hopping antijam radio. We are going to test them together next spring and we are going to assure interoperability in some A/J mode.

We are doing this on a country-by-country basis. I meet every 6 months with my counterparts from France, Germany, and England to discuss those kinds of problems.

There is a proliferation on the battlefield of ADP—automated data processing—kinds of things, and we have to cope with that. We have a military computer family program to try and standardize the computers in the Army today. We need sensors for correlation and assessment capabilities. We do not have enough of that today or do it very well.

There is the issue of how much voice versus data. We do not have very good IFF and we understand that. With the advent of these impressive sensors that we have to deal with, how do we limit the demands that people make on those and not have the battlefield so proliferated with data we cannot handle it. So, there is the possibility of saturation and you have to watch that. You cannot give everybody what he wants.

OBJECTIVES OF DOD TACTICAL COMMUNICATIONS PROGRAMS

Anti-jam and low probability of intercept (LPI); interoperability; improved performance, capacity, reliability; reduction in size and weight; increased automation—speed of service; increased ranges of operation; improved data handling; and EMP hardened.

The objectives of our tactical communications programs are shown here, not only A–J but low probability of intercept. For example, we are moving to millimeter wave for some of the communication devices.

Increased coordination for speed of service is important. You will hear that from General Donahue on the TRI-TAC program. The range of operations, some of the radios in the TRI-TAC program allow us to communicate over long ranges now. The data handling, and lastly, EMP hardening so that we can actually withstand and fight in tactical nuclear warfare if we have to with at least EMP hardening of our communications systems.

DEFENSE GUIDANCE

What is the handbook, so to speak, that the services go by in order to structure their programs? It is called the Defense Guidance. As you know, the Secretary issues that once a year. It just came out for 1984 to 1987, and it is quite specific. In this open session, the most I can say about the C³I area guidance is that it does provide the policy, the fiscal guidance, and then the programmatic guidance as to what we are supposed to do, including a prioritization of how the services should make their investments.

So, with that handbook they structure their POM's and come back at us as to how they think they should invest in this area. The Defense Guidance this year has extensive discussion of C³I. The way we have done that, we have put the C³I discussion for tactical with the tactical writeup, with the strategic writeup, and then we have a defensewide C³I. It is quite tailored to the programs and systems it must support.

Mr. STRATTON. You made reference to earlier to the Israeli experience.

Mr. LATHAM. Yes, sir.

Mr. STRATTON. Could you elaborate on that in open session?

Mr. LATHAM. I think it is pretty well known, sir, that the Egyptians were trained and were using Soviet jamming equipment, and were quite effective for a while in jamming Israeli aircraft in UHF communications. Also, there was some jamming against the tactical VHF frequencies. It worked for a while.

The Israelis after a while invented some tactics and so on to work around it. But still, their radios were vulnerable and it was demonstrated that over extended ranges you can actually deny tactical communication with your aircraft, between aircraft and from aircraft to ground, and ground to air.

We have a program, which I will describe later on—a very inexpensive program—that we believe has taken care of that particular threat.

Mr. STRATTON. You also have not touched on, except maybe one word there on your last slide, on the question of possible interception.

Mr. LATHAM. Yes, sir.

Mr. STRATTON. The sort of thing that the Soviets are supposed to be able to do with our ordinary overseas telephone calls out of Russia.

Mr. LATHAM. Yes, sir. The Soviet intelligence apparatus, the apparatus that they have down to the tactical level is quite extensive and very good. They make effective use of communications intercept to help them fight the war. There is no question about it.

Mr. STRATTON. Just in passing, some author has come up with the conclusion that the Navy was able to intercept the Japanese Fleet's communications on their way to Pearl Harbor, but they did not want to make any report on it because otherwise we could not have gotten a good war going. Do you have any information on that?

Mr. LATHAM. No, sir, I do not.

Mr. STRATTON. I am not sure you were around at that time, but I thought maybe you might have picked it up.

Mr. LATHAM. No, sir, I do not know any of the specifics on that. There has been quite a bit written about the U.S. capability, the signal intelligence capability against the Japanese naval and other code structures which we were successful in breaking, finally. But I do not know about that particular intercept.

Mr. STRATTON. All right.

COMMUNICATIONS COMMAND AND CONTROL (C^3) MISSION AREA STRUCTURE

STRATEGIC C^3	THEATER & TACTICAL C^3	NAVIGATION/ WARFARE COMMAND & CONTROL	SUPPORT & BASE COMMUNICATIONS
• STRATEGIC C^2 • STRATEGIC S&W • STRATEGIC COMMS	• THEATER C^2 • THEATER COMMS • TACTICAL C^2 • TACTICAL COMMS	• LAND WARFARE • AIR WARFARE • NAVAL WARFARE • NAVIGATION & POSITION FIXING	• SUPPORT COMMS • BASE COMMS

EW & C^3 COUNTERMEASURES	COMSEC	INFORMATION SYSTEMS AND DEFENSE COMMUNICATIONS SYS
• SELF-PROTECTION • ESCORT; STAND-OFF & COUNTER C^3 • TACTICAL SURV., RECCE. & TARGET ACQ • MULTIMISSION, TECHNOLOGY & SUPPORT	• COMMUNICATIONS AND SIGNALS SECURITY	• INFORMATION SYS • COMPUTER SECURITY • LONG HAUL COMMS • COMM. SERVICES INDUSTRIAL FUND

Mr. LATHAM. The mission area called C^3I has two sides and I have just shown you here the C^3 side of it. These are the budget areas as we have broken them down in the budget—strategic, theater and tactical, warfare D^3—and I will define what is in some of these—the defensewide support, and EW and C^3 countermeasures. This particular mission area from OSD oversight encompasses a very, very large number of program elements, in fact C^3I is well over half the program elements in USDRE.

Warfare C^2, air warfare, for example, is the AWACS; naval warfare is the E^2C. We will not talk about the strategic or defensewide, or EW or C^3CM areas today. These are the other areas that I have to worry about, including communications security. I will show you in just a moment what the moneys are that we have in this mission area.

THE PRESIDENT'S DEFENSE BUDGET

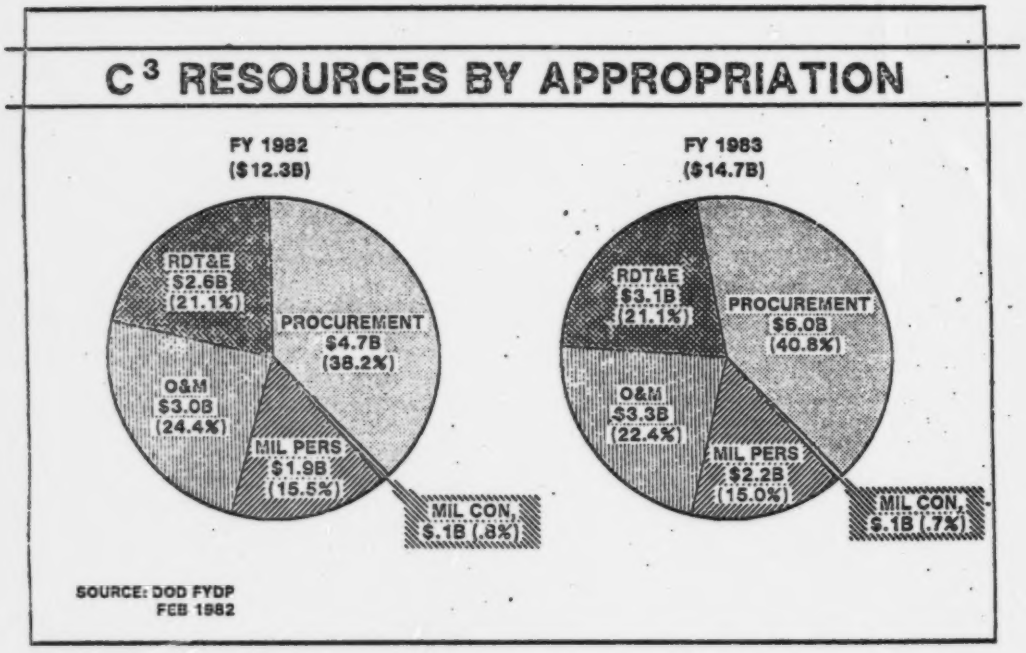
Driven by the expanding threat. Justified and not extravagant: Must regain strength. Nuclear strength is not a substitute for conventional strength; e.g. 85 percent of total is for non-nuclear forces. Despite projected real growth, Soviet investment is likely to exceed ours for many years. Approval means the danger to our security can be brought under control.

I would like to make one pitch for the President's budget, if I might because I think it is somewhat misunderstood that the modernization of the strategic forces is apparently driving the budget, and that is not really the case.

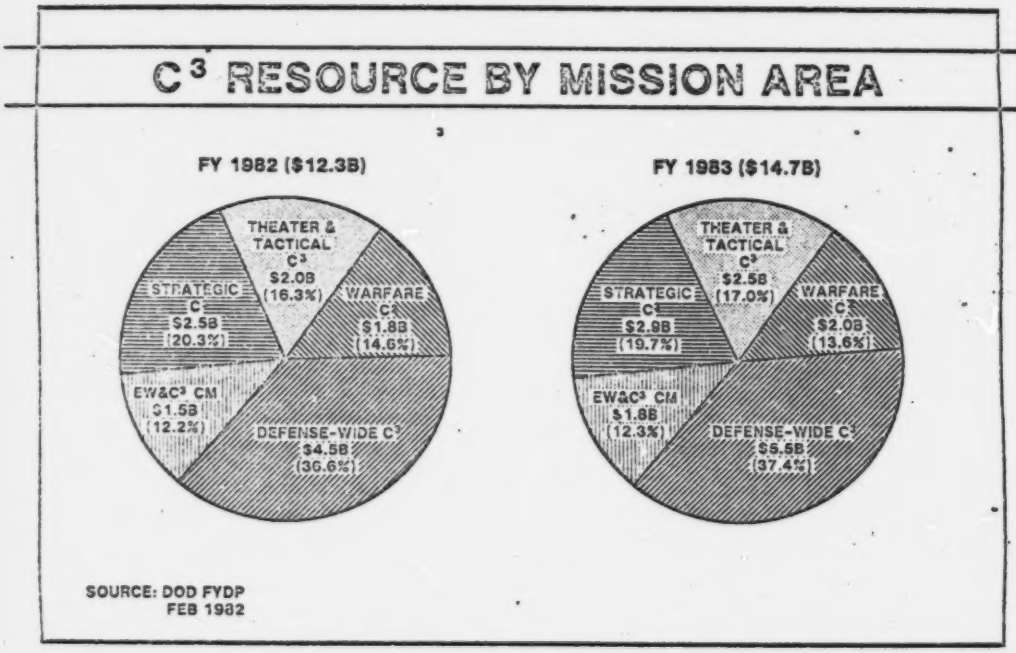
The budget is really being driven, we believe, by the expanding Soviet threat and importantly, our position is that the nuclear strength is not a substitute for conventional strength, and in point

of fact, about 85 percent of the budget is for non-nuclear forces. That is an important point.

However, even with the amount of money we are asking for in our projected growth, we believe that the Soviets are going to outinvest us even for the next few years coming—as they have outinvested us substantially for the last several years.

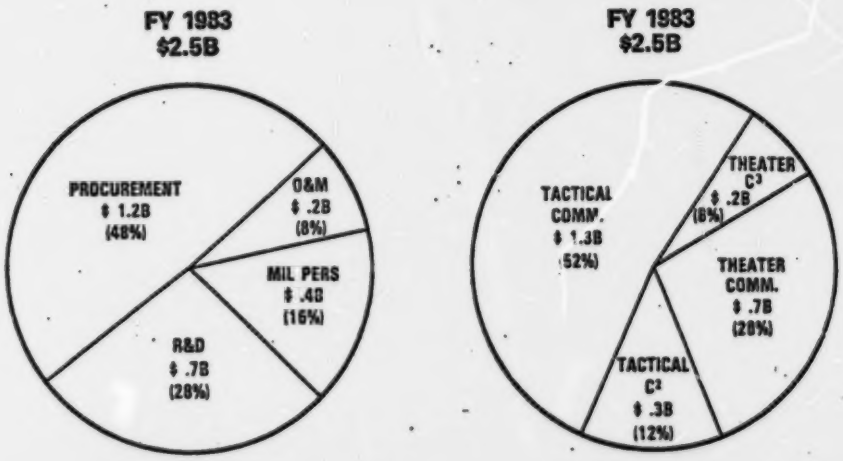


Now, if we look at the moneys by resource, by appropriation here is C^3 by appropriation, a total, $14.7 billion for 1983 with $12.3 billion in 1982. You can see here procurement is around $6 billion for the C^3 area in 1983. I will break this out by service and some other details in a minute.


C³ RESOURCE BY MISSION AREA
FY 1982 ($12.3B)
THEATER & TACTICAL C³ $2.0B (16.3%)
WARFARE C³ $1.8B (14.6%)
DEFENSE-WIDE C³ $4.5B (36.6%)
EW&C³ CM $1.5B (12.2%)
STRATEGIC C³ $2.5B (20.3%)
FY 1983 ($14.7B)
THEATER & TACTICAL C³ $2.5B (17.0%)
WARFARE C³ $2.0B (13.6%)
DEFENSE-WIDE C³ $5.5B (37.4%)
EW&C³ CM $1.8B (12.3%)
STRATEGIC C³ $2.9B (19.7%)
SOURCE: DOD FYDP FEB 1982

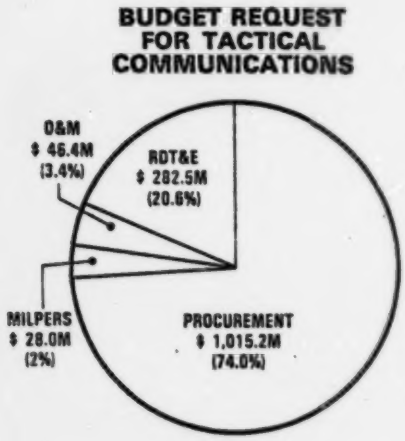
About 41 percent is procurement. That is a large sum of money. If I look at it by mission area we have it shown here, and you can see that the theater tactical area is about $2.5 billion. Of that $2.5 billion, a little over a billion is tactical. The defensewide C^3 areas eat up a lot of money because it is very people intensive. It has about 95,000 people charged to that particular account. That takes care of all the base telephones and other defensewide communications around the world such as the defense communications system (DCS).

THEATER AND TACTICAL C^3 FY 83 FUNDING



If you look at theater and tactical broken out in a little more detail, here it is by appropriation and then by specifics into the particular areas of tactical and theater COMM. We are talking about a $2.5 billion request for 1983. You see, as I mentioned, procurement is about $1.2 billion of that, 48 percent; tactical COMM, theater C^3, and so on as shown here. I will break out these for you in more detail in just a minute. Here are some of the programs to show you where some of the dollars are g[illegible]ng.

FY83 BUDGET REQUEST AND MAJOR TACTICAL COMMUNICATIONS PROGRAMS



MAJOR PROGRAMS

- JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)
- VHF ANTI-JAM RADIO PROGRAM - SINCGARS
- UHF ANTI-JAM RADIO PROGRAM - HAVE QUICK
- JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)
- HF IMPROVEMENT PROGRAM
- GROUND MOBILE FORCES SATELLITE COMMUNICATIONS
- SERVICE TACTICAL COMMUNICATIONS PROGRAMS

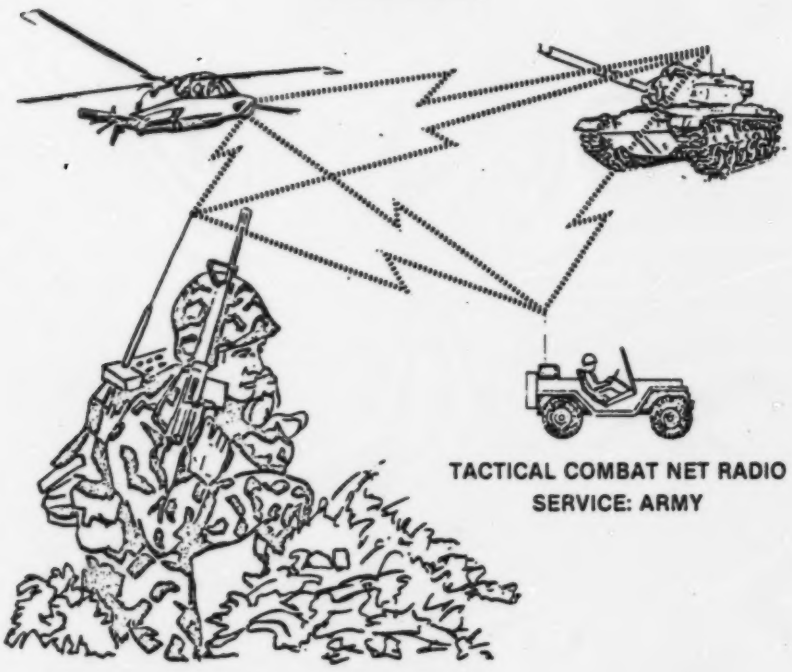
For example, in the tactical area about $1.3 billion is being required in 1983. The major programs that are absorbing up a lot of that money, of which about $1 billion dollars is procurement, are shown here. General Donahue will brief this in some considerable detail to you.

We have the SINCGARS program and the Have Quick UHF jam-resistant program. I will describe those to you in more detail in just a second. The JTIDS program, we will touch on that. We have an HF improvement program which means HF equipment which has jam resistance.

There is large buy in ground mobile force satellite communications terminals, and then there are a large number of service tactical communications programs and I will summarize those at the end and show you where some of that money is.

I would like to then quickly go through several of the major programs that I think you might have some interest in, some of which I just mentioned on that last viewgraph.

SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS)



The first one is the so-called SINCGARS. It is a VHF radio. It operates from 30 to 88 megahertz in the so-called VHF band. It is a radio that is supposed to go in jeeps, trucks, helicopters and a soldier can carry it around with him. It has been in development a long time. The Army has finally narrowed it down to a particular approach called the slow frequency-hopping radio.

SINCGARS PROGRAM OBJECTIVES

Develop a new generation of manpack, vehicular, and airborne VHF radios for combat forces of all services: Lightweight, modular construction; securable; electronic counter-counter measures capability (ECCM); nuclear hardened; high reliability; and compatible with existing family of radios.

Participate with NATO to agree on standards for interoperability of tactical VHF radios when operating in the ECCM mode.

What we are trying to do with this program is shown here. It is to develop, as I mentioned, a manpack or air-borne VHF radio that is not only lightweight but is also securable. It is fully communications securable with a concept that NSA has developed and the Army is buying. It has ECCM capability, that is, it is jam resistant and the way it does that is by hopping from one frequency to another. It is so-called slow, but it is actually rather fast if you were try to watch it on a scope.

It is hardened against nuclear effects, that is EMP, electromagnetic pulse. We believe it will be highly reliable, and it is compatible with the existing family of radios. For example, if a fellow has

a SINCGARS he can connect into the TRI-TAC equipment as General Donahue will discuss.

We are, as the bottom line says here, participating with NATO on all the standards on this radio. For example, in a non-ECCM mode it is fully interoperable with the Germans, or British, or French in the 30 to 88 megahertz band; in the A/J mode we have MOU's for the different countries to try and make sure we test each other's radios and we can talk.

SINCGARS PROGRAM ACQUISITION

Funding: RDTE, fiscal year 1982, $13.7 million; fiscal year 1983, $17.9 million; fiscal year 1984, $16.8 million. Procurement, fiscal year 1983 $19.8 million; fiscal year 1984 $20.3 million.

Fiscal year 1983 program: Initiates operational testing and limited production of manpack/vehicular radio slow HOP. Resumes development of COMSEC and airborne configuration.

Milestones: Advanced development initiated April 1978. Army testing conducted September 1982. Limited production decision January 1983. Initial operational capability July 1985.

The program dollars are shown here. There is not a lot of money yet in procurement in 1983, but the program will go and the big procurement dollars would appear in about the 1986–87 time frame. What we have done with this program is restructure it so that the Army can accelerate the development and IOC of these radios.

As it stands now, the Army will have the first SINCGARS production radio in 1985, with the buy-out going for several years. So, this is where we stand in the schedule on this. It has been accelerated from where we were because we believe they need the radios and we have a good program to do that.

Mr. STRATTON. This is a new program, right?

Mr. LATHAM. SINCGARS?

Mr. STRATTON. No, the one that you just put up.

Mr. LATHAM. I was going to tell you about the UHF, yes, sir.

Mr. STRATTON. I have a couple of questions here with regard to SINCGARS that I want answered.

Mr. LATHAM. All right, sir.

Mr. STRATTON. SINCGARS has experienced cost growth and program restructuring during the past two years. Therefore, there is no program contractual baseline, and some equipments have been deferred.

We understand, however, that you are accelerating the program by proceeding directly from a very abbreviated 3-month competitive advanced development into production, skipping the full-scale engineering development phase.

What does this do with respect to procurement costs, and do you think that this concurrent approach is wise?

Mr. LATHAM. Let me go back and try and take your question piece by piece.

First of all, this radio has been in development for a long number of years, in fact, too long. We felt that the forces must have a modern jam resistant radio sooner. So, we said, "Is there a way to restructure the program with adequate risk and cost containment such that we could get this radio sooner and not experience any further cost growth."

We took a look at that and said we could eliminate one of the three contractors. The Army has carried three contractors in this program for quite a while. They started out with even more contractors, narrowed it down to three. They are trying to carry three all the way through to a point where they can finally make a production decision.

One of the contractors had a radically different approach than the two that are now left in the program. It was going to be a more expensive approach and the Army—and I concur in it completely—decided not to do that. It would have stressed the interoperability problem and it would have cost more money to buy the radio.

So, the Army narrowed it from three to two. Now, those two fellows, as well as the third one who was eliminated, had been working on this program, as I say, for a large number of years, and we had in fact expended tens of millions of dollars getting where we are today.

So, there is hardware in existence. It is not like they are starting off from scratch. They actually have radios. You can go out, touch, and talk into it if you want to. So that we are at a point, we believed, that it was safe to say, cut off one, bring it down to two and conduct the competition over the next 9 months. The Army is performing an in-depth on-site inspection of the contractors—both of them. They will then conduct a 3-month limited DTE type test, DTE type test to make sure that we have a reasonably good piece of hardware. Then choose one of those two and go into production.

We believe that by going that way, we will contain the cost much better than if we had gone some other way. Second, it gets the radio much sooner.

Now, we have deferred the airborne part of the radio. The Army is now examining whether or not to reinstitute the airborne development part of SINCGARS which, by the way, is a repackaging, it is not inventing a new radio. It is just making it so it will fit in a helicopter and survive a helicopter environment.

Is that the right way to do, or is there a cheaper way? One of the options, for example, is the Air Force and the Army have to talk to each other on SINCGARS at the hopping rate that the Army has chosen. So, in order to do that with all the right protocols, the Air Force is going to modify one of their airborne radios called an ARC-186, so they will talk. It is a VHF radio in Air Force cockpits. It may be cheaper to take that existing airborne qualified ARC-186 and put it in helicopters, that is an option, and there are a couple of others.

So, the Army is looking at that. We think the program is adequate from a point of view of technical risk, schedule risk, and that we are going to be able to cap the cost rather than have more cost growth.

Now, the program manager owed us on March 3—he owed the Army staff—a story on the investment portion of the SINCGARS program; that is the R.D.T. & E. and the procurement. We do not have the life-cycle O. & M. parts. We will not have those until September.

I do not know if that long-winded answer did it or not, but I tried to be specific.

Mr. STRATTON. Yes, with respect to cost and schedule risk, would you put them in the low or medium category?

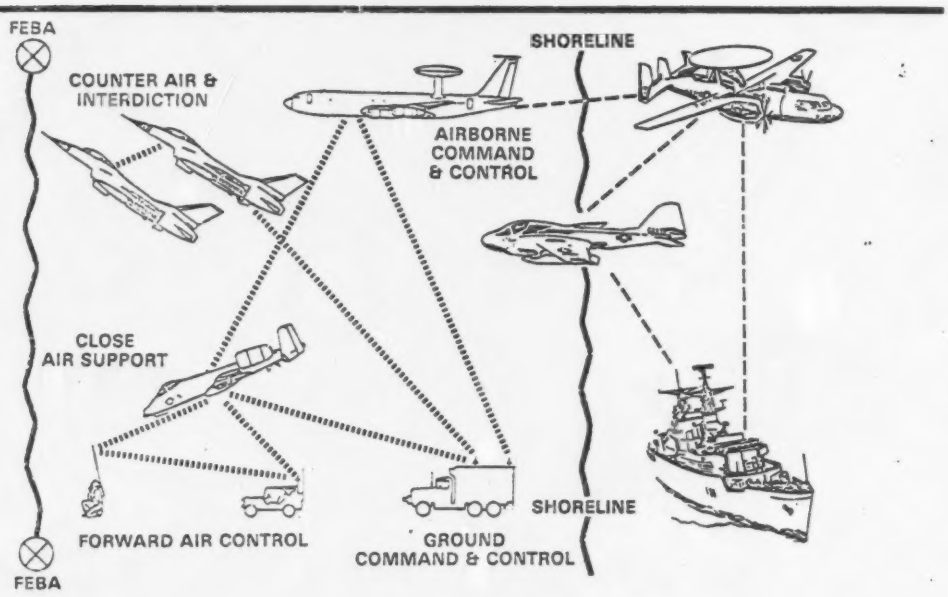
Mr. LATHAM. I put the schedule risk in a low category; I put the cost, maybe in a medium because I have not gotten from the program manager what he thinks the life-cycle cost is going to be on it.

What we are trying to do is cap the cast via a competitive bid for the first production lot. And the Army has some leverage now, we have two guys, they are both hungry. They see a big buy of radios. It is going to be a fixed-price buy-out. Both the contractors, from what I have heard from the Army, are about equal in terms of the type of radio, the quality, and so on.

There is a great incentive for these fellows on a fixed-price production contract to drive the price down. I think the design to unit production cost is going to be pretty attractive. It had better or we will not buy that many radios.

Is that adequate, sir?

TYPICAL THEATER AND TACTICAL UHF AJ CONNECTIVITY



Mr. STRATTON. Yes, are there any other questions?

Mr. LATHAM. Let me talk about the UHF world. This is typically 225 to 400 megahertz, and you will find that UHF radios are used everywhere in the tactical forces today, be it between ships and aircraft, aircraft to aircraft, or aircraft to ground units, or between aircraft.

It is a very extensively deployed communications device. It is used not only by our forces but all the forces that are allied and friendly with us as well. The Soviets use a part of this band.

HAVE QUICK OBJECTIVES

Provide tactical Air Force improved near-term jam resistant UHF voice communications. Provide capability to counter current Warsaw Pact threat. Provide limited capability for Army and Navy Forces. Encourage allied and NATO use.

Now, one of the problems today is jamming, as I mentioned. We have a program called Have Quick which provides antijamming capability to UHF radios. It is a near-term fix, it is very easy to do and it is very simple to do because the types of radios we have are very amenable to this quick fix. We have a large inventory of radios in the Air Force and in the Army that are called ARC-164—they are the UHF radios. You can take out one electronic card in that and put another one in, and you can make it into a Have Quick radio. A Have Quick radio is a UHF radio, 225 to 400, that hops very slowly—in this case it is quite slow.

But it is fast enough to meet that Soviet jammer that gave the Israelis so much trouble, and in fact will beat the improved version of that jammer.

This is a program that is very inexpensive. The Air Force has bought 4,400 of these. The Navy is going to buy several hundred and put those with an existing Navy radio so they can talk ship to aircraft, aircraft to ship with the Have Quick. The Army is considering buying some of these for their helicopters.

Mr. HILLIS. We are sitting here wondering, would it be wise to assume the Russians have improved their jammer ability since 1973?

Mr. LATHAM. Yes, sir, they have. We know what that is. We can talk about more on that in the classified session.

JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

Objective: Joint program to provide information distribution for tactical forces.

Functions: Digital data and voice communications. Positioning and navigation. Inherent identification.

Characteristics: Flexible architecture. ECM-resistance. Crypto-security. High data rate. Survivability.

Applications: AWACS and tactical C^2 interfaces (U.S. and NATO). USAF fighters and Army units. Navy and USMC C^2, combatant ships and aircraft.

There is another communications program that is going to deliver a really unique capability called a JTIDS—you cannot see that too well—that will do everything noted on this viewgraph.

It is a very, very innovative new type of communication. It is both a voice and a data terminal. It provides the capability for the tactical commanders to talk to each other in voice—in fact more than one voice circuit per terminal—and it allows them to send data between each other at high rates securely, and it provides jam-resistance.

In addition to the way the terminal works as a communication device it also has a precision clock in it. As it turns out, by using time we can tell who is located where. It provides a time difference of arrival technique that allows you to locate the friendly users. As a result, there is some inherent positional information in the JTID system—so it will do what is known as relative navigation. It allows you to tell your forces where they are rather precisely relative to each other. In addition, in the Air Force version of this terminal you have the TACAN function also incorporated. It is secure.

JTIDS is also jam-resistant and it is capable of supporting both voice and data communications.

There are two programs developing this capability. The Air Force and the Navy programs will result in terminals which will talk to each other in the sense of interoperation. The objective of this, then, is to have a distributed information system for both voice and data. It is done in the so-called digital fashion, it is not a so-called analog radio, it is a digital radio. It does the positioning and navigation as I mentioned, and it has some inherent identification capability.

If you are on the net, you are friendly. So, it has these kinds of characteristics which, if you remember from the prior viewgraph outlining desirability of communications systems, it does meet those requirements and it has these kinds of applications.

In particular, JTIDS is being used today by the AWACS. It is installed, it is operating and it does work. We will be buying more of these JTIDS for the tactical forces.

JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS) PROGRAM ACQUISITION

Funding: RDT&E fiscal year 1982 $132.6 million; fiscal year 1983 $167.5 million; fiscal year 1984 $138.5 million.

Procurement, class 1 for E-3A (in E-3A line) fiscal year 1982 $6.9 million; fiscal year 1983 $16.3 million; fiscal year 1984 $19.8 million.

Ground terminals (PE 23434F) fiscal year 1982 $26.5 million; fiscal year 1983 $26.2 million; fiscal year 1984 $22.5 million.

Fiscal year 1983 program: Develop depot support equipment for class 1 terminals (AF). Continue development of class 2 tactical terminal (Air Force and Army). Continue development of class 1, 1A, and 2 terminals (Navy and USMC).

MILESTONES

JTIDS program established, 1974. Program review (milestone I), April 1978. AWACS terminal production (class 1/TDMA), March 1980.

DSARCs: IIA (class 2/TDMA for Air Force, Army), January 1981. IIB (DTDMA terminals for Navy, USMC), January 1982. III/production decisions, 1985–88.

IOCs: AWACS/JTIDS (class 1/TDMA), 1983. Class 2 users, 1987–88. DTDMA users (1st battle group), 1988.

The investment is as shown here. The program is still in R. & D. in the Navy and in the Air Force. The Air Force program is a fixed-price development; the Navy is cost-plus. They (Navy) just let the full-scale engineering development contract for JTIDS.

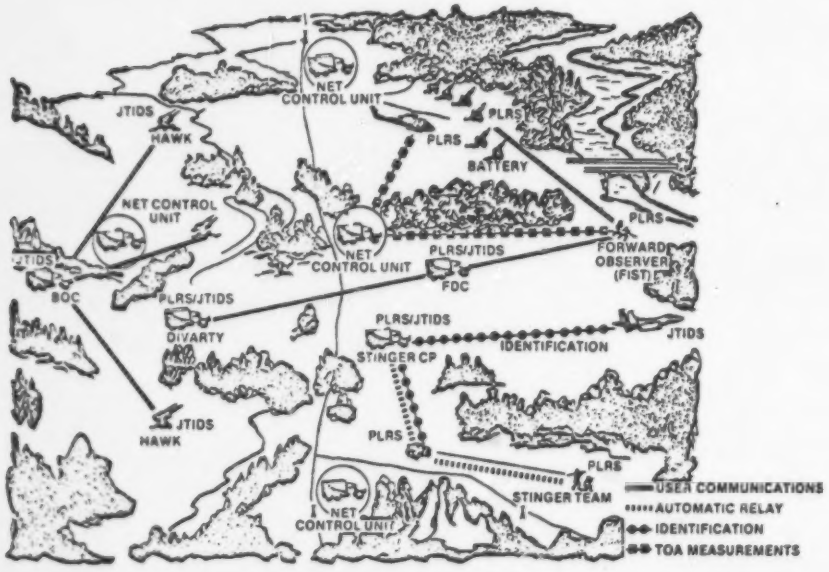
The so-called class I terminals for the E³A's and the NATO AWACS are being procured and are coming on line right now. Then there are some ground terminals for the AWACS so it can deliver high data rate information to ground terminals. Then there is an R.D.T. & E. line up here for the two services to finish out the development.

The Army is part of the Air Force's JTIDS development program. All services will eventually have the JTIDS capability. I will show you how the Army is going to use it in just a minute.

We will see these terminals on line in the Air Force in about 1986, and about 1987 to 1988 for the Navy.

In fact, here is the schedule. It has been a while getting here. We have had the DSARC for the Air Force, the DSARC for the Navy just recently, and a production decision will be about 1985-86 for both services.

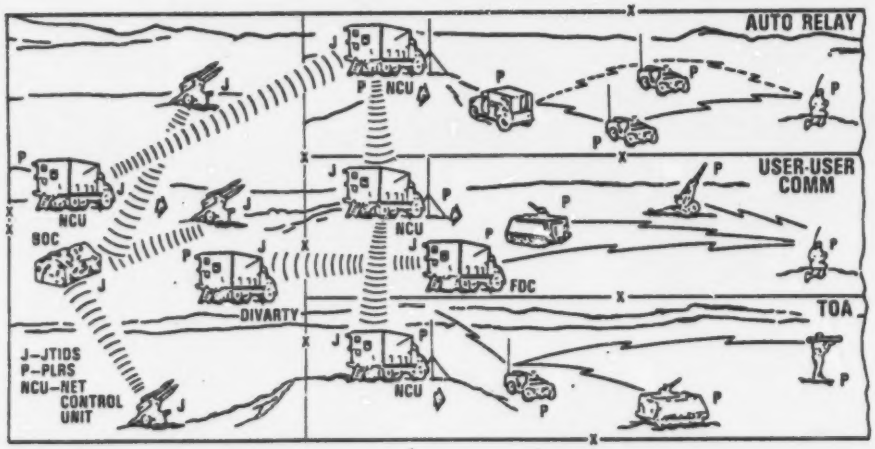
POSITION LOCATION REPORTING SYSTEM (PLRS)/JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS) HYBRID



The Army has come up with a rather unique way to apply two systems together that are in development, one is called PLRS, or position location reporting system, and the JTIDS. They are going to make a hybrid system out of it. They will put it at a command post back here, say a battalion operations center, a JTIDS class II terminal, identical to the one the Air Force has procured only built for putting it in a truck.

They will use that to control a net of air defense weapons systems out here such as the Hawk which will have a JTIDS terminal. They can then exchange data back and forth here securely with anti-jam.

PLRS/JTIDS HYBRID SYSTEM



Down echelon further, there is a PLRS/JTIDS hybrid capability to talk to units that are down echelon such as Stinger teams, forward air controllers out here who will give their position back and forth to the control center back here.

So, with this PLRS hybrid JTIDS system you can do a number of things. First of all, there is some identification capability; there is very precise location capability out of this, and the commander sitting back in his PLRS/JTIDS van can actually tell where the friendly forces are and who is still alive.

The equipment that will be fielded in the PLRS/JTIDS looks something like this. There will be a master control unit here and under current plans there will be five of these per division. They will have a PLRS terminal. They will have a JTIDS terminal and the net control system. These equipments, then, will go throughout the Army ground forces for position location reporting information and be able to provide a tie to the Air Force which is also equipped with JTIDS.

PLRS/JTIDS Hybrid Program Objectives

Merge PLRS and JTIDS technologies to provide: Data distribution capability for automated systems. Position location and reporting capability. Navigation and identification information. Interoperability and connectivity for digital systems.

Include: Anti-jam capability (spread spectrum and frequency hopping). Error detection and correction. Secure transmissions.

Provide Manpack, vehicular, and airborne user units.

The program objectives, then, are shown here. We are actually merging these two technologies. It gives the Army something they do not have today and that is a secure, jam-resistant data distribution system, and voice. It gives you position location reporting, antijam, and so on, something that they do not have today that ought to take the battlefield finally into the 20th century.

Funding: RDTE, fiscal year 1982, $18.7 million; fiscal year 1983, $32.9 million; fiscal year 1984, $19.7 million.

Fiscal year 1983 program: Validate user unit design and enhance COMSEC. Demonstrate tactical scenarios in test bed. Prepare for prototype system testing at Army sites.

Milestones: Definition/evaluation (phase 1), July 1979. Interoperability analysis (phase 2), June, 1980. Interface development (phase 3), March 1982. Prototype evaluation (phase 4 and 5), first quarter fiscal year 1982; first quarter fiscal year 1984. ASARC III, fourth quarter fiscal year 1986.

The moneys that are in this program are shown here—it is all R.D.T. & E. right now. Procurement starts in about 1985–86 on both systems. You see the ASARC for the Army is about the fourth quarter of 1986 here.

C³ SUPPORT FOR THE RDJTF

HQS RDJTF support provided by joint communications support element (JCSE).

JCSE funding: Procurement fiscal year 1982 $33 million; fiscal year 1983 $7 million; fiscal year 1984 $16 million. Note: Funding shared by services.

Major equipment for JCSE: UHF and SHF SATCOM terminals including anti-jam modems. Improved HF radio equipment. Mode 1 autodin terminals. Tri-tac equipment-switching, transmission, control, COMSEC.

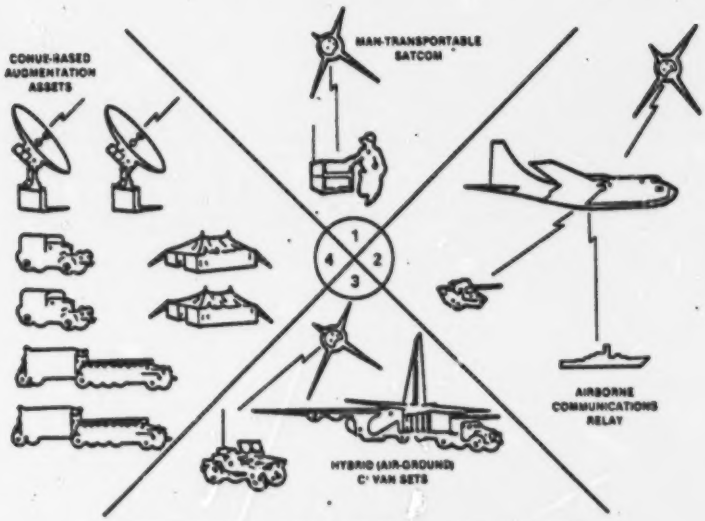
Services fund for equipment for their RDJTF designated units.

Joint service programs which will enhance C³ for RDJTF: SINCGARS tactical VHF radios (IOC 1985). Joint crisis management capability (IOC 1986). NAVSTAR global positioning system (IOC 1986).

Now what about the RDJTF? We are funding a joint communications support element, a JCSE. That is procurement money and the dollars are shown here. It is small amounts of money in these outyears because in 1981 we also spent about this sum of money to procure this capability for this JCSE. It is equipment that is shown here—some of it being the TRI-TAC equipment for the RDJTF Headquarters. Each of the services are funding the programs which take on this RDJTF mission.

For example, the Army units that are assigned to the RDJTF—they buy the C³ systems for their forces and then, when they are assigned, they have to work together and we have assured that interoperability. This JCSE is a sort of headquarters capability.

JOINT CRISIS MANAGEMENT CAPABILITY (JCMC)



SERVICES: ARMY (LEAD), AIR FORCE

Another capability that we are providing is the joint crisis management capability (JCMC) which is a fly-away communications system. It has several different levels.

A level 1 is a very austere, man-portable communications satellite terminal that is UHF. A level 2 is a more capable system, it can be put on something like on a C–130 and they can actually communicate from the C–130 and command forces. There are special modifications to the doors and hatch covers on the 130 so they become antennas. You snap those on, roll the equipment into the aircraft, hook it up, and it communicates.

The Level 3 is a more sophisticated capability in which you actually have some air-ground assets, and level 4 is a CONUS-based system much more capable for a major deployment of, say, several divisions of force.

Right now we have money in the program for funding the first three levels of this.

JCMC Program Objectives

Provide theater commanders with locally owned, rapidly deployable C^3 capabilities for crisis management and military contingency operations.

Capabilities include: Lightweight, manpack UHF SATCOM terminals (level 1). Shelterized C^3 components for airborne and ground operations (levels 2 and 3). Long haul and local communications. Clear and secure voice and data capabilities. Battle staff positions. Support equipment (trucks, generators, et cetera).

Establish CONUS-based C^3 assets to augment the capabilities of a large crisis management force (level 4).

The program objectives, then, are shown here. It is to give the theater commander a locally-owned and deployable C^3 capability for whatever crisis or emergencies he is trying to cope with and includes, as I mentioned, manpack UHF, SATCOM at the level 1;

shelterized equipment for the levels 2 and 3 to include SHF satellite terminals that are mobile, and then finally to establish this level 4 capability here in CONUS for major deployment.

JCMC PROGRAM ACQUISITION

Finding: RDTE fiscal year 1982 $2.8 million; fiscal year 1983 $6.0 million; fiscal year 1984 $3.0 million. Procurement fiscal year 1983 $49 million; fiscal year 1984 $26 million.

Fiscal year 1983 program: Continues RDTE on aircraft "hatchcover antennas" for airborne operations (level 2). Initiates procurement of four air/ground C^3 systems (level 3).

Milestones: Manpack SATCOM terminal (level 1). Tasked to Army November 1980. Contract award March 1982. Initial operational capability (IOC) December 1982.

Air-ground C^3 components (levels 2 and 3): Tasked to Army and Air Force July 1980. Contract award 1 Q fiscal year 1983. Operational testing conducted March 1986. IOC August 1986.

Level 4 will be implemented as CINCS requirements are developed and validated by JCS.

The funding, then, for this program, is as shown here. There is procurement money in 1983 as noted, about $49 million. We have the hatch cover antennas—that is an Air Force-funded piece—and there is an Army-funded piece to initiate, then, the procurement of the level 3. The manpack satellite terminals, we brought back in the early days—some of this has already been purchased; the air-ground components level 2 and 3 here.

We will have this capability on line, in terms of levels 2 and 3, about 1985-86; level 4 after that—if we buy a big level 4 system, which is still being discussed.

I will finish up with a rundown of the three services and the Marine Corps—all four services—where the monies are going. There is a catch-all for a lot of other tactical communications.

ARMY COMBAT SUPPORT COMMUNICATIONS PROGRAM

Funding: Procurement fiscal year 1982, $268.6 million; fiscal year 1983, $297.4 million; fiscal year 1984, $183.7 million.

Fiscal year 1983 program includes: Tactical VHF radios—PRC-68, $7.1 million—VRC-12, $31.7 million—SINCGARS, $19.8 million. Tactical HF radios—PRC-104, $22.8 million—GRC-193, $29.6 million. Tactical multi-channel—TRC-113 radios, $23.4 million—TRC-145 radios, $23.9 million—data buffers, $35.9 million—coaxial cables, $9.1 million. Other—Special forces equipment, $15.4 million.

The first is the Army Combat Support Communications program—$297 million in 1983. Here is a partial break-out of where all that is going. What you see is, it buys lots of tactical radios, VHF, HF, multichannel radios. Some of these types of radios, by the way, the 113's and the 145's are going to the National Guard and Reserves. This is a VHF multichannel line-of-sight type radio that goes to the Active Forces as well as the Reserves, and then special forces equipment.

AIR FORCE TACTICAL COMMUNICATIONS PROGRAM ACQUISITION

Funding: Procurement fiscal year 1982, $173.9 million; fiscal year 1983, $206.2 million; fiscal year 1984, $256.6 million. Fiscal year 1983 program includes: TRI-TAC, $137.9 million. GMF SATCOM, $53.9 million. Advanced ground communications systems (SEEK TALK), $10.5 million. Tactical ground communications, $3.9 million.

In the Air Force's case, about $206 million can be identified as tactical communications. There is some argument sometimes on what is tactical, but basically we think it is about $206 million.

TRI-TAC, a big piece here, as you see—and General Donahue will talk to that. Ground mobile with SATCOM capability, that is the ground mobile satellite communications terminal. Here is SEEK TALK. This is another UHF antijam communications program that eventually replaces Have Quick. Seek Talk is a more robust, capable system but it is just a tactical voice communications system.

NAVY FLEET TACTICAL COMMUNICATIONS PROGRAM ACQUISITION

Funding: Procurement fiscal year 1982, $54.7 million; fiscal year 1983, $71.3 million; fiscal year 1984, $76.8 million.

Fiscal year 1983 program includes: Shipboard UHF equipment, $29.5 million. Aircraft UHF equipment, $5.2 million. Shipboard HF equipment, $1.1 million. Shipboard communications automation, $7.1 million. Submarine integrated comunications, $12.7 million. Boats, crafts and portable radios, $4.9 million. Installation kits, minor items and calibration equipment, $10.8 million.

In the Navy's case about $71 million for tactical communications. It includes the items as shown there. There is a large collection of shipboard communications equipment, UHF, for example between ships or for satellite terminals. That adds up to about $70 million.

MARINE CORPS TACTICAL COMMUNICATIONS PROGRAM

Funding: Procurement fiscal year 1982, $38.7 million; fiscal year 1983, $50.1 million; fiscal year 1984, $100.3 million.

Fiscal year 1983 program includes: Tactical UHF radios, $17.8 million. Tactical VHF radios—PRC-68, $6.3 million—PRC-77, $4.4 million—control (GRA-39), $1.9 million. Tactical digital data set—PSC-2, $17.8 million.

Finally, the Marine Corps' case with $50 million, and that buys these types of equipments. A great deal of communality, of course, between what the Marine Corps buys and the Army in many cases. That is where their money will go in 1983.

Mr. STRATTON. Does ELF come into the picture somewhere?

OTHER VITAL C³I PROGRAM INITIATIVES

NO PRIORITY INTENDED

North American Air Defense; GPS/IONDS; DSCS III/FLEETSAT; Mobile Command Centers (MCC); ELF; TACAMO/ECS; WWMCCS ADP (WIS); and Enduring Intelligence System.

Mr. LATHAM. The next viewgraph, right there. You have it. There is a whole lot of other things going on that we have not talked about.

Mrs. HOLT. Mr. Chairman, may I interrupt just a minute?

Mr. STRATTON. Yes, ma'am.

Mrs. HOLT. I move, Mr. Chairman, we be authorized to go into executive session today and 1 subsequent day for purposes of receiving national security information.

Mr. STRATTON. You have heard the motion. Under the rules, the Clerk will call the roll.

Mr. CHASE. Mr. Stratton.

Mr. STRATTON. Aye.

Mr. CHASE. Mrs. Holt.

Mrs. HOLT. Aye.
Mr. CHASE. Mrs. Byron.
Mrs. BYRON. Aye.
Mr. CHASE. Mr. Hillis.
Mr. HILLIS. Aye.
Mr. CHASE. Mr. Mavroules.
Mr. MAVROULES. Aye.
Mr. CHASE. Mr. Badham, Mr. Leath, Mr. Courter, Mr. McCurdy.
Mr. MCCURDY. Aye.
Mr. CHASE. Mr. Kramer, Mr. Hertel.
Mr. HERTEL. Aye.
Mr. CHASE. Mr. Hunter.
Mr. HUNTER. Aye.
Mr. CHASE. Mr. Price, Mr. Bennett.
Mr. STRATTON. Eight ayes, the motion is carried, and the committee will have the authority to go into executive session at whatever time it is required.
You may continue.
Mr. LATHAM. As you know, sir, we are in the midst of a major improvement of the strategic command control communications area and listed here are some of the other initiatives.
We have submitted to the Congress the North American Air Defense Master Plan, and that will be testified to and described on March 30. This is a major initiative in the GPS/IONDS Global Navigation and positioning system. The GPS/IONDS is a satellite program for positive navigation control and worldwide detection of nuclear detonations.
The defense communication satellite program is the Navy's Fleetsat—we will be procuring additional numbers of those.
We are entering into a Mobile Command Center development which is a way to survive with the command capability, we believe, from the NCA down to the force commanders.
Here is your ELF program. The Navy is proceeding to procure an ELF system, a two-site system, partially in Wisconsin and partially in Michigan; a small system compared to what was originally proposed many years ago. That has the President's approval and we are moving ahead with that.
The Tacamo is the Navy's airborne communications relay platform. They are going to move on to a new platform called the ECX to replace the aging C–130's.
The World-Wide Military Command Control System's advanced data processing is in bad need of upgrading and we have the so-called WWMCCS Information System [WIS] modernization program to accomplish that. And finally, we are doing a number of things in the intelligence side of things.
These are generally wrapped up in the strategic budget and we would be glad to go over that with you any time you like, sir.

C³ PROGRAM

Joint operations yield many joint programs. Many "small" dollar items procured as "parts." NATO heavy involvement.
Driving need for interoperability and standards. Acquisition of C³ systems—especially strategic—not easy.
System classification/security. Fact that C³ is (or should be) "command personality" sensitive.

Last, are there some unique issues with C^3? You know, everything is not perfect. The problem is that in C^3 there are a lot of joint programs so I have a lot of trouble in the budgeting process among all three services in getting them into a lock-step on a program sometimes, or even two of them on occasion. So, that presents an interesting management problem. [Laughter.]

Mr. STRATTON. They are doing it together now?

Mr. LATHAM. Sir?

Mr. STRATTON. They are doing it together now.

Mr. LATHAM. Oh, yes, they all love me. [Laughter.]

Mr. LATHAM. Actually, it works pretty good. In fact, we did very well in the 1983 internal struggle. Everybody now sort of says, "You know, we really have to do something about this. Let us put our minds to it and put some resources in it." In fact, the Defense Guidance says C^3I should enjoy the same priorities as a weapons system.

The trouble is that many people look at C^3 as a lot of parts. I have gone over a lot of the "parts," and what we need is a systems perspective and to quit looking at it as a "parts list." The involvement in NATO drives the system heavily. We have to interoperate with them and talk with them, and that makes it difficult sometimes.

It is not easy to buy C^3 systems. From whom do you buy a C^3 system? You know where to buy a tank and a jeep, and an MX, but where do you buy your C^3 systems? It is difficult. There is a problem of classification and security. And last, the commander really is a key to this system.

That is sort of a "quick and dirty" summary of a lot of things, sir.

Mr. STRATTON. Thank you very much, it was a very good summary. It looks as though we may be having a rollcall here in the near future.

WRITTEN STATEMENT OF DONALD C. LATHAM

I. INTRODUCTION

Thank you for the opportunity to discuss the tactical communications programs in DoD. The emphasis today will be on the tactical communications programs which involve more than one Service and are considered "Joint." However, the discussion of our tactical communications efforts would not be complete if we didn't briefly review the major individual Service efforts and the status of communications for the RDJTF. I also believe it worthwhile to highlight those efforts underway involving tactical communications with our NATO allies.

Let me begin by describing what our major objectives are towards improving our tactical communications capabilities. Figure 1 is a summary of these objectives and from the discussions to follow you will see that we are addressing these through the various programs we have in development or those which are now in production. We are putting a great deal of emphasis on those programs which will give us improved communications in a hostile jamming environment and those which offer significant improvements in performance, capacity and reliability. The very serious and urgent need for jam resistant communications cannot be over-emphasized. [Deleted.] The need for interoperability is also being stressed—particularly for those systems which will operate in joint or NATO environments.

To describe how the area of tactical communications is being addressed it is pertinent to look at how one might view the total C^3I system. The C^3I system has four basic characteristics that fundamentally influence the way we view the continuing evolution of the architecture and assessment:

The criticality of the C³I system to effective operations is well recognized by potential adversaries; hence it is a lucrative target for enemy actions. To counter that threat, it is vital that key facilities and links be secure, resistant to physical, nuclear, chemical, and electronic attack, and readily reconstitutable to provide survivable and enduring operations.

The C³I system is not a loose aggregation of sensor, command centers and communications, but rather is a vital component of the total C³I weapon system mix which permits cohesive operation of our war fighting capability.

The C³I system must provide the capability required by commanders to manage joint and allied operations; consequently, it is vital that we reflect the Commander's "personality" into the system designs plus insure that we have adequate levels of interoperability.

The C³I system architecture must gradually evolve as tactics, doctrine, new sensors, and weapon systems are similarly evolved. To control the direction and pace of that evolution, we must formulate system architectures which will support our force policy and strategy and fund C³I programs with equal priority to the weapons programs they support.

Accordingly, we are examining tactical communications: in context with the various weapons systems they support; as individual components which are part of overall system architectures; to ensure that they are secured resistant to electronic attack and provide survivable and enduring operations and that they have adequate levels of interoperability.

The Department of Defense is requesting a total of $1.4B for tactical communications. A further breakdown of this tactical communications request is $283.M for R,D,T&E, $1.01B for procurement and $75.M for operations and personnel. The request primarily supports the major programs identified in Figure 1.

Before discussing some of the specific tactical communications programs it is important to understand what the tactical communications environment includes and the specific architectural initiatives that are underway to improve the existing capabilities. Figure 2 suggests the complexity of the tactical communications interfaces and connectivity requirements. Notice the myriad of systems, both internal and external that must be interfaced and supported by our tactical communications systems. You are beginning to see the scope of the problem and why a systems architectural approach to addressing the solutions is both necessary and quite complex.

Each individual Service has its own internal tactical communications system architecture to support their respective missions. These architectures are addressed in the respective Service C³ Master Plans. For example, the Army's architecture is known as the "Integrated Tactical Communications System" and the Marine Corps calls theirs "Landing Force Integated Communications System." These architectures generally specify the major communications nodes, links, media and equipments to be employed on an intra-Service basis. The problem, however, is to address the architecture(s) required to satisfy the joint or inter-service tactical communications environment to achieve interoperability for joint and/or combined NATO operations. One such scenario where these architectures will play a vital role is the RDJTF. Interoperability of tactical communications will be required for RDJTF tactical trunking and switching systems and for the combat net radio systems in the HF, VHF and UHF spectrums.

The TRI-TAC program has a jointly approved architecture for trunking and switching in the tactical communications environment. The need to provide jam resistant capabilities on our critical C³ links has necessitated the development of DoD architectures for each of our tactical radio systems in all portions of the radio frequency spectrum. Both secure voice and data communications capabilities are being included in these architectures. The discussions which follow will address these respective architectures in more detail.

II. JOINT SERVICE TACTICAL COMMUNICATIONS PROGRAMS

The following programs are key to improving our tactical communications capabilities both in the Joint and Intra-Service environments. These programs are designed to achieve one or more of the objectives outlined in Figure 3.

A. *TRI-TAC.* The new equipments being developed and procured under the TRI-TAC program will provide marked improvements in our tactical communication capabilities. Current multichannel switched communication systems of the tactical forces are primarily analog, labor intensive, requiring manual operation, lack security and flexibility and cannot be rapidly moved and set up. The new TRI-TAC equipments utilize technological advances incorporating integral communications security plus automation in switching and network control. Improved reliability,

survivability, and mobility of the equipment to meet the demands of modern warfare is integral to the design. The TRI-TAC system is comprised of circuit and message switches, multichannel transmission facilities, systems control and technical control centers, local distribution facilities for static and mobile subscribers, voice data, and narrative terminal devices and associated communications security equipment. The architecture and desgin of the TRI-TAC systems is oriented around the deployment of a distributed type multinode network which inherently possesses a high degree of nodal connectivity. Figure 4 is a representation of this system architecture. Both circuit and message switching are accomplished at the nodes of the network which are interconnected by multichannel lines that are provided by a combination of line-of-sight, troposcatter, and satellite transmission facilities. The systems include a variety of single and multichannel terminal, transmission, and switching facilities for system access by static and mobile subscribers.

System management and control elements may be distributed to the maximum extent feasible for survivability and to permit the establishment of a number of independently controlled subnetworks. The systems are fully secure with end to end encryption facilities integrated into appropriate elements of the systems. All forms of traffic (i.e., voice, data, teletypewriter, and facsimile) can be accommodated by the system; automatic alternate routing and precenence/pre-emption service are incorporated in the system design to satisfy grade-of-service and speed-of-service requirements. The design is oriented toward an eventual highly digital system. However, in recognition of the size of the existing analog DoD tactical communications inventory, the constraints associated with the turnover of that inventory and the transitional plans of the Services/Agencies, the TRI-TAC systems will be hybrid (analog and digital) in their initial implementation. The hybrid design will permit continued use of the significant amounts of analog oriented switching and transmission equipment in the Service inventories and will allow gradual introduction of the required new equipment.

TRI-TAC Program Status. The first items which we concentrated on in the TRI-TAC program were the development and procurement of the large automatic switches. There were several reasons for this: (1) the Services all needed new automatic switches and (2) the switches as the central element were expected to influence the design of the other associated equipments particularly in the detailed digital characteristics wherein we had no prior standardization. As it developed the switches, and in particular the [deleted] have played a strong role in the system design. Because of the emphasis on the switches, many people even today have the impression that the TRI-TAC program is only a program for switch development and procurement. This is not the case. We have identified approximately 18 items which have been assigned for development and procurement to the Services under the program. Figure 5 is a summary of these items and their status. Last year the TRI-TAC program made a noteworthy shift from development to production. Our fiscal year 1983 budget request for this program reflects this shift and includes $126.0M for continuing RD&T and $440.5M for procurement. The RDT&E funds will be utilized for continued work on the unit level switches, system control element, various terminal devices and pre-planned product improvements. The procurement funds will be utilized to procure such items as the large circuit and message switches, troposcatter radios, nodal control elements, multiplexing equipment, and associated terminal equipments such as telephones, teletypewriters and facsimile equipment.

B. Tactical Radio Programs. Programs to improve our capability for secure, jam resistant line of sight (VHF and UHF) and over the horizon (HF) tactical radios are well underway. These development and procurement programs fall under three major initiatives designed to satisfy the respective architectures according to the portion of the frequency spectrum they occupy.

(1) *High Frequency Communications Architecture for Theater and Tactical Communications.* Each of the Services currently utilizes HF radio communications for a variety of their C^3 links where the unique properties of HF radio make it attractive. These features include coverage of distance beyond line-of-sight without relays, relatively low cost and portable terminals, proven technology, and inherent flexibility in networking and use. Figure 6 represents typical elements of an HF anti-jam connectivity requirement for the theater and tactical environment. Of key importance here is the need for interoperability among air, ground, naval forces and fixed command, control and communications facilities.

The Services have embarked upon programs to replace their existing tactical HF radios. These radios are generally beyond their useful life and require excessive maintenance and operators that must be highly trained. Using newer technology, HF radios are now being produced commercially that do not require any particular

unique skills for operation and have exhibited excellent reliability. Each of the Services has begun the procurement of these new radios.

The connectivity depicted in Figure 6 drives the requirement to provide jam resistance on those HF links which are used to support critical C^3 functions. Today we have [deleted] in the field. At the same time there is a need for interoperability amongst the various forces. The inclusion of jam-resistant features on these HF radio links will impact interoperability between the various HF radios if the ECCM techniques employed are different. In fact, without an agreed upon ECCM approach we will lose interoperability when we need it most—in a wartime jammed environment.

Accordingly, OSD has directed that each of the Services participate in the development of interoperable ECCM techniques. The Services have developed an interoperable mode for both teletype and voice sutitable for use in systems to be fielded in the 1985 time frame. The Services are also preparing an ECCM HF standard for the long term which would also be suitable for use by NATO and other allies.

The requirement for communications support to the Theater Nuclear Forces is also being satisfied, in part, by use of an improved, all new, HF radio network called the Regency Net. Again we must replace our existing aging HF equipment and provide new equipment [deleted]. Under current schedules, we expect to have the Regency Network in place by [deleted].

(2) Very High Frequency Communications Architecture for Theater and Tactical Communications. As with HF communications, the Services also use extensive VHF radio communications for a variety of their C^3 links. Figure 7 is a representative use of VHF tactical radios and again shows the need for interoperability and connectivity between air, land, mobile and individual users at several echelons. The key program for providing interoperable and jam-resistant VHF radios is SINCGARS (Single Channel Ground-Airborne Radio System). SINCGARS is a joint program with the Army as lead Service to develop a new tactical radio as the primary means of command and control for infantry, armor and artillery forces. SINCGARS is being designed to replace and significantly improve the entire Army inventory of manpack, vehicular and aircraft single-channel VHF-FM radios. In addition, SINCGARS will either replace Air Force, Navy and Marine Corps close air support VHF radios or will be interoperable with them. The SINCGARS family of radios will have the capability of transmitting voice and data in a secure and jam-resistant mode and will be consistent with NATO interoperability requirements.

In December 1981, the Army streamlined the acquisition approach of SINGARS in order to expedite fielding of the radio. This decision was based on an urgent need to provide a new tactical radio with jam resistant capability to meet the escalating Soviet ECM threat. Under this new approach two contractors, both developing a "slow hop" ECCM module, will provide radios in August 1982 to the Army for laboratory and operational testing prior to a production decision in 2nd QTR fiscal year 1983. A third development contractor working on a "fast hop" approach has been terminated.

Based on this approach both development and procurement funds are requested in fiscal year 1983. Procurement funds will be used to award a contract in 2nd QTR fiscal year 1983 so that fielding can begin in July 1985, one year earlier than previously projected. RDTE funds will be used to support testing and development of the airborne subsystem, [deleted] remote control and other ancillary devices which had previously been deferred due to funding shortfalls within the program.

(3) Ultra-High Frequency (UHF) Communications Architecture for Theater and Tactical Communications. Our UHF tactical communications are our primary C^3 links for air to air and air to ground requirements. Figure 8 is representative of the connectivity requirements. Again, the need for jam-resistant features and interoperability for joint and combined operations is a must. The demonstrated Warsaw Pact capabilities [deleted]. Since the Air Force and Navy rely on UHF for their primary tactical command and control and the Army and Marine Corps use it extensively in their tactical aircraft and for air-ground operations, it is essential that interoperable anti-jam UHF communications be provided.

Based upon [deleted] the Air Force has implemented an interim UHF AJ program for its most critical C^2 links called Have Quick. All equipment was procured by the end of fiscal year 1981 and installation of approximately 4,400 units will be completed during fiscal year 1982. The Navy is also procuring Have Quick for three Battle Groups while the Army has begun planning for implementation at key C^2 facilities. This is a very inexpensive interim system which we expect will provide adequate jam-resistance to the mid-1980s and beyond.

The Air Force has in full-scale development a follow-on UHF anti-jam system, Seek Talk aimed at providing [deleted]. In October 1981, concerned that the Air

Force approach was not compatible to Navy, Army or Allied approaches, OSD requested that each of the Services determine which anti-jam technique was most suitable for the late 1980s and further instructed the Air Force, as lead Service, to provide an integrated anti-jam architecture (to include JTIDS) which would ensure that the necessary degree of compatibility and interoperability could be achieved for joint Service and combined (allied) operations. This architecture is currently under development and will be available in April 1982. It is expected that specific planning for additional UHF anti-jam equipment (if any) to be procured in the late 1980s will be based upon the results of this architectural analysis.

C. Joint Tactical Information Distribution System (JTIDS). JTIDS is a joint-Service program with techniques and equipments in various stages of acquisition to meet the information-sharing needs of several tactical combat environments. JTIDS capabilities include jam-resistant, secure and high-capacity distribution of digital data and voice communications, with inherent navigation/position location and identification features for participants. Its time-division-multiple-access (TDMA), error-correction coding, spread-spectrum and frequency-hopping techniques, combines with its "many-to-many" distributive architecture (Figure 9) and situational displays for its users, provide a new dimension for tactical C^3.

The Air Force is producing TDMA Class 1 command terminals for US and NATO AWACS and their ground C^2 interfaces to provide an ECM-resistant communication system for AWACS's air surveillance and associated C^2 capabilities; IOCs begin in mid-fiscal year 1983. Both Air Force and Army are developing smaller, Class 2 tactical terminals for use in fighter aircraft, the Position Location Reporting System/PLRS–JTIDS (PJH described below), and ground air defense systems. These applications will extend AWACS/C^2 information to both air and ground weapons platforms so that forces may be directed and weapons employed more effectively and with less risk. Tactical information displays for these weapon platforms will also reduce the load on spearate voice communication nets to help free them for urgent or discrete calls.

The Navy and Marine Corps are developing a similar family of terminals based on a Distributed TDMA technique that will allow more flexibility to meet the information distribution needs of multi-mission Battlegroup forces. The Navy plans to equip capital ships, C^2 sites and its E–2C force with Class 1 or 1A command terminals, and its tactical aircraft and other combatant ships with Class 2 tactical terminals. Technical interoperability with basic TDMA terminals will be retained via a TDMA channel in the Distributed TDMA terminals.

Operational deployment of both TDMA Class 2 and Distributed TMDA terminals will begin during the later-1980s and extend into the 1990s. Further applications continue under review, to include JTIDS' utility for indirect identification and jam-resistant voice operations. Electromagnetic compatibility with other radio-navigation equipments in the band is under continuing evaluation to assure a combination of civil flight service safety and effective JTIDS operations. Our fiscal year 1983 request is $167.5M in RDTE funds. Procurement funding for Class I terminals is included in AWACS funding.

Internationally, besides the participation of most NATO countries in the NATO AWACS Program and its JTIDS applications, the United Kingdom plans to use JTIDS for its defense forces and France is developing a JTIDS-compatible system of its own. Further NATO applications may be either via a Multifunctional Information Distribution System (MIDS) program (based on JTIDS technology) to meet NATO-wide military requirements, or via national procurements or production of JTIDS/MIDS equipments for their tactical forces.

D. Position Location Report System (PLRS)/JTIDS Hybrid. The PJH is a computer based system which provides real time, secure data communications, identification, and position location and reporting information for the tactical forces (see Figure 10). The system utilizes PLRS and JTIDS equipments to provide significant performance advantages to include: rapid response times and satisfactory throughput, resistance to jamming, security, low levels of mutual interference, and freedom from contention with voice communications users.

Common features of both PLRS and JTIDS will be reflected in the PJH. Both systems are time-ordered spread spectrum systems which utilize time division multiple access (TDMA) technology. Both systems employ [deleted]. Both utilize error correction coding and are capable of supporting multiple communications channel operations. Some of the systems' differences are described below:

1. PLRS is intended to provide accurate identification, position location, and navigation information automatically to the Network Control Unit and reporting of that information to commanders and supported users within the Army division upon re-

quest. In the PJH configuration, it will also provide data communications support to [deleted] requirements.

2. As previously indicated JTIDS is an information distribution system which will operate at selected nodes in the Army C^2 structure to also provide position location/navigation and cooperative unit identification to its users in both the Army and joint arenas. Twenty JTIDS nets can operate simultaneously in the same geographic area without mutual interference.

The integration of the two systems into the PJH will result in one system capable of meeting data distribution, position-location, and communications needs at several echelons and to a wide variety of weapon systems. Additionally, a data communications interface between the Army division and other services will be achieved along with some commonality of equipments. Major components of the PJH will include the Net Control Unit (NCU), and Enhanced PLRS User Unit (EPUU) and JTIDS terminals. [Deleted.]

Our 1983 funding request for this program is $42.9M in RDT&E funds. These funds will be used to develop, install and evaluate the initial prototype system. Additionally, some development of interfaces with [deleted] to be supported will occur.

E. *Tactical Communications Security (COMSEC) Equipment.* As important as anti-jam features on our tactical communications equipment. COMSEC is also vitally important to ensure the security of our transmissions. We have established as one of our major objectives the achievement of total tactical voice security. To accomplish this we must: [Deleted] to ensure these goals are met.

Our 1983 budget request for tactical COMSEC, while not a part of our tactical communications budget line, is designed to ensure that the [deleted] are satisfied by fiscal year 1984. We are requesting $259M for procurement and $39.7M for RDT&E. The procurement funds will primarily be utilized for VINSONs, PARKHILLs and COMSEC for the TRI-TAC program.

III. SERVICE TACTICAL COMMUNICATIONS PROGRAMS

While the majority of programs previously mentioned involve one or more Services, it is beneficial to also examine the tactical communications procurement budgets of each Service. These budgets, in some instances, include funds to buy equipment from the joint programs such as SINCGARS as well as to procure equipment to satisfy the unique missions of the respective Service.

A. The Army in their fiscal year 1983 budget request for Combat Support Communications ($297M) is buying VHF squad radios (AN/PRC-68) the New HF manpack AN/PRC-104 and the counterpart AN/GRC-193. The procurement of additional existing multichannel equipment such as the AN/TRC-113 and AN/TRC-145 radios along with associated data buffers is aimed at improving the Army's readiness posture. The Army has also included procurement funds in the fiscal year 1983 request to upgrade the antennas on many existing tactical radios to increase performance and to provide a measure of anti-jam protection. It should be noted that procurement for TRI-TAC equipment for the Army in the fiscal year 1983 budget request is $283M and includes funds for procurement of switches, multiplexing equipment, troposcatter radios and various terminal devices such as facsimile equipment and single subscriber terminals.

B. The Navy fiscal year 1983 request for tactical communications is $71.3M. This includes funds to procure shipboard and aircraft HF and UHF equipments, communication automation equipment for ships, integrated communications systems for submarines and various portable radios for small boats and crafts. The Marine Corps fiscal year 1983 request for tactical communications is $50.1M and includes funds for a portable UHF radio, the AN/PRC-68 squad radio, the AN/PRC-77 VHF FM radio and procurement of the digital data set AN/PSC-2.

C. In fiscal year 1983 the Air Force is requesting $206.2M for tactical communications. These funds will be used to procure communications equipment to support the Seek Talk, TRI-TAC, Ground Mobile Forces, Satellite Terminals, and equipment for logistics and training.

D. *Rapid Development Joint Task Force Tactical Communications.* Communications capabilities required by the RDJTF are generally the same as for US forces worldwide. That is communications must be secure, jam resistant, reliable, lightweight, and mobile. The equipment should also meet interoperability, compatibility and sustainability requirements. The problems facing the RDJTF are somewhat unique. First, there is little communications infrastructure available to supplement the equipment they would bring with them. For example, in Southwest Asia, military communications brought in C^3 with the Force must be counted on to provide 100 percent of the service required. Second, equipment must be inherently reli-

able and capable of operating with minimum downtime. There will not be the luxury of extensive backup equipment or maintenance service. There is also a requirement for long distance communications capability because of the potentially remote areas an RDJTF could be deployed and the need to be connected to the supporting CINC and potentially into National Command Authorities. This means extensive use of military communications satellites plus HF communications. These long-haul links are vital and can be expected to be subjected to enemy jamming.

Communications equipment will compete for airlift resources with other tactical equipment and, therefore, it must be tailored and packaged to provide maximum capability within airlift weight and size constraints. Another requirement of particular importance to the RDJTF environment is that equipment be capable of rapid setup and teardown and that it have excellent ground mobility and air transportability.

Enroute the RDJTF will utilize UHF SATCOM with any one of the Gapfiller or FLEETSAT satellites. In addition, an HF link from the enroute FDJTF will be provided into the Defense Communications System (DCS). Once on the ground, the RDJTF commander must be provide communications to the NCA, if required, as well as to his component forces which could be operating over extremely long distances. The Ground Mobile SHF satellite terminals, AN/TSC-85s and 93s can be used to provide SHF DSCS connectivity. DoD communications satellite developments will continue to emphasize improved anti-jam techniques and reduction in the size and weight of the terminals in order to better support technical operations.

HF communications will provide the primary backup means to the satellites. As previously indicated, HF developments are being actively pursued, not only to modernize existing systems, but also to improve reliability, to reduce the vulnerability to jamming and interference, and to reduce the probability-of-intercept.

Intermediate range communications will consist of standard military line-of-sight systems and troposcatter equipment to provide multichannel communications up to 200 miles. Current inventory equipment, such as the old AN/TRC-97 will be replaced by the new TRI-TAC family of AN/TRC-170 troposcatter ratio systems.

Short range communications are required in the immediate tactical operations area. Air-to-ground, ground-to-air and air-to-air requirements of all Service component forces call for secure, reliable and anti-jam single channel radios. Some of these radios are already in procurement (Have Quick UHF/AM) while the SINCGARS (VHF/FM) program is not expected to begin production until 1983-84. Our ground forces are now relying heavily on the current AN-VRC-12 and AN/PRC-77 families of VHF/FM radios secured with the new VINSON COMSEC devices. Our Air and Naval forces are being provided near term anti-jam improvements in the UHF range under the Have Quick program. Distribution of new COMSEC equipment is being closely coordinated so that deploying forces will not have an interoperability problem which could seriously affect tactical operations.

There are also a wide range of on-going communications procurements and developments under the TRI-TAC program, such as the AN/TTC-39 and AN/TYC-39 switches, the unit level switch (ULS) and the tactical digital facsimile and others, which are being projected for use with the RDJTF. The budget request in fiscal year 1983 to support the TDJTF is primarily contained in the individual Service tactical communications programs. The forces which comprise the RDJTF will utilize their own organic equipment. However, the Joint Communications Support Element (JCSE) largely procured in recent years, will provide the tactical communications equipment necessary to support the RDJTF headquarters. The Services have continued to procure communications equipment to specifically support the JCSE. In fiscal year 1983 they are requesting $7M to procure TRI-TAC trunking and switching equipment for the JCSE. In fiscal year 1982, $33M in procurement funds were budgeted for UHF and SHF SATCOM terminals, improved HF equipment and TRI-TAC equipment.

E. NATO Tactical Communications Initiatives. The majority of our tactical communications initiatives with NATO are designed to ensure interoperability of tactical systems. To ensure this interoperability, various technical interface standards have been developed or are currently under development. Our goals are to ensure interoperable, secure and anti-jam FH, VHF and UHF systems with the NATO allies.

We are also trying to ensure that the tactical trunking and switching systems of the NATO countries will be interoperable. Currently, the respective systems (trunk networks) interoperate through an interface unit based upon an agreed technical specification (STANAG). For the midterm (1988) we are attempting to achieve network interoperability through standard digital gateways for such systems as TRI-TAC (US), PTARMIGAN (UK), ZODIAC (NETHERLANDS), and CATRIN (ITALY).

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The US is also committed to or is negotiating various bi-lateral agreements on various communications equipment, again, with the goal of interoperability and standardization.

IV. Summary. Let me summarize by reviewing the highlights of our tactical communications budget request. We are requesting a total of $1.4B in fiscal year 1983 to support our tactical communications programs. Our program is aimed at (1) providing improved, interoperable, secure and anti-jam communications, (2) strengthening our existing telecommunications systems; and (3) enhancing the readiness of our tactical forces in balance with needed upgrades in tactical communications, mobility, performance and resistance to attack. Your support of these critical tactical communications programs is urgent and very necessary.

Are there any questions that any member has?

Mrs. HOLT. No. I just wonder if anybody knows all of these acronyms. [Laughter.]

Mrs. HOLT. Do you?

Mr. LATHAM. No, ma'am, I do not think so, some of them I do.

Mr. MAVROULES. I too was not sure—and maybe rightly—the whole time what you were talking about.

Mr. LATHAM. I went slowly. [Laughter.]

Mr. MAVROULES. It sounds like you know what you are doing.

Mrs. HOLT. I am very impressed that you could get the Air Force and the Army talking to each other.

Mr. LATHAM. I would like to introduce General Donahue.

Mr. STRATTON. Before you start with that, let me just ask another question here, Mr. Latham.

The total acquisition cost of the TRI-TAC program is estimated to be $6 billion. But we are not sure of those figures because TRI-TAC is not a system covered by the SAR. The question is, what is TRI-TAC reported under?

Mr. LATHAM. We were discussing that before you arrived, and I do not know if we have an answer or not. Do you have one, Bob?

General DONAHUE. Sir, only one item of equipment in the TRI-TAC program is included in the SAR process and that is the TYC-39 switch program. IT is a noncongressional SAR which is submitted by OSD to OMB and GAO.

While the TRI-TAC program could be considered to be an umbrella-type operation each of the pieces of equipment is a separate line. So, the pieces of equipment in and of themselves do not qualify for the SAR process, but if you covered all of the pieces of equipment that were under that umbrella, then certainly, it would qualify for the SAR program.

Mr. STRATTON. I think we probably ought to get some sort of a fuller answer on that.

General DONAHUE. Yes, sir.

Mr. LATHAM. Sure, we would be glad to.

[The following information was received for the record:]

The TRI-TAC Office functions as the system architect and engineer and provides the overall management necessary for insuring proper control and integration of the individual equipment acquisition programs which comprise the TRI-TAC Program. The equipment acquisition programs are managed by the Services and are funded from the Services' budgets. The Services report on these individual equipment acquisition programs to the Congress as part of the normal authorization and appropriation process.

Mr. STRATTON. The bells have rung for a vote. So, perhaps at this point we might recess for 10 minutes so we can answer our names on the rollcall, and then we will resume in executive session when we come back.

Mr. LATHAM. All right, sir.

Mr. STRATTON. We will stand in recess for 10 minutes.

[Whereupon, at 3:20 p.m. the subcommittee adjourned, to proceed in executive session.]

Mr. STRATTON. We will resume the session. The subcommittee will come to order, and pursuant to the authority previously granted we will now go into executive session. The Chair will request those who are not authorized to remain to leave the room. The clerk will certify whether the room is clear.

Mr. CHASE. Yes, sir.

Mr. STRATTON. General, you may proceed.

STATEMENT OF MAJ. GEN. ROBERT J. DONAHUE, U.S.A., DIRECTOR, JOINT TACTICAL COMMUNICATIONS, DEPARTMENT OF DEFENSE

General DONAHUE. Sir, I thank you for this opportunity to appear before you today and provide you an overview of the TRI-TAC program.

Rather than summarize my briefing statement I would like to go into the relationship of the TRI-TAC, the equipment in the TRI-TAC program, state for you our objective and show you what we have achieved thus far.

TRI-TAC was chartered to design, develop, and acquire tactical switch communications equipment for the services. Each of the services are participating in the program to include the National Security Agency.

My staff is a joint staff. My Vice Director is Air Force, the Chief of Staff is Navy.

TRI-TAC PROGRAM OBJECTIVES

Interoperability: U.S. and allied forces—Existing tactical/non-tactical systems.
Modernization: Digital technology—COMSEC internal throughout—transparent to the user—Increased capacity and flexibility—Reduced manpower.
Economics: Eliminate redundant development programs—Economic production buys—Life cycle cost savings.
Increased survivability.

These are the objectives of the program in generic terms. The interoperability that we have between the new equipment and the existing inventory equipment, is just as important as the interoperability that we will achieve between ourself and our allied forces.

Digital technology has allowed us to do things that we have not done before in the analog world. One of those things is the COMSEC scheme that we have which will provide end-to-end security within the system. The COMSEC will be transparent to the user.

Principally in our switching, message switching and circuit switching we have achieved a significant decrease in manpower. Some people say that TRI-TAC was not a technical decision, but was a business proposition—that proposition being principally to avoid redundant development programs; to achieve in some way economic buys, and of course to reduce the life-cycle cost.

I will attempt to show you during the course of the briefing where we have addressed each of those.

In the system itself, with its multinode and high capacity trunks between those nodes, the survivability has been greatly enhanced. This is the same chart that Mr. Latham showed you earlier. This is the environment in which the tactical switch systems of the services must live. We must be able to achieve the interoperability between and among the various systems.

Mr. STRATTON. Mrs. Holt said she had trouble with some of these acronyms. I am not sure I really understand what TRI-TAC is. I wonder if you could explain it to us—this is an executive session—with a little bit more substantial detail.

General DONAHUE. Certainly. Sir, it has been investigated in significant detail just where TRI-TAC came from. The name TRI-TAC has no origin, it just "became." It certainly cannot be derived from the participants in the program because there are four. But somehow or other TRI-TAC came up. The formal name of the organization, is the Joint Tactical Communications Office.

Mr. STRATTON. Communications what?

General DONAHUE. Office.

Mr. STRATTON. All right. That is tactical communications within a particular theater, right?

General DONAHUE. Yes, sir. Our charter specifically limit us to the switched portion of that network as opposed to the SINCGARS on lower level tactical portion of that network that Mr. Latham was addressing earlier.

EQUIPMENT DEVELOPMENTS BY SERVICE/AGENCY

Army: Circuit switch (AN/TIC-39), message switch (AN/TYC-39), digital group multiplexers (DGM), net radio interface (NRI), modular tactical communications center (MTCC), single subscriber terminal (SST), mobile subscriber equipment (MSE), short range wide band radio (AN/GRC-144 MOD).

Navy: Tactical digital facsimile (TACFAX), advanced narrowband digital voice terminal (ANDVT).

Marine Corps: Unit level circuit switch (AN/TIC-42; SB-3865), unit level message switch (AN/GYC-7).

Air Force: Communications system control element (CSCE), communications nodal control element (CNCE), digital tropo radio (AN/TRC-170), digital non-secure voice terminal (DNVT).

NSA: COMSEC.

Each of the services have been tasked to provide some element of this program. This tasking included life-cycle support. It also included development, production, the logistical support and the training for each of these pieces of equipment.

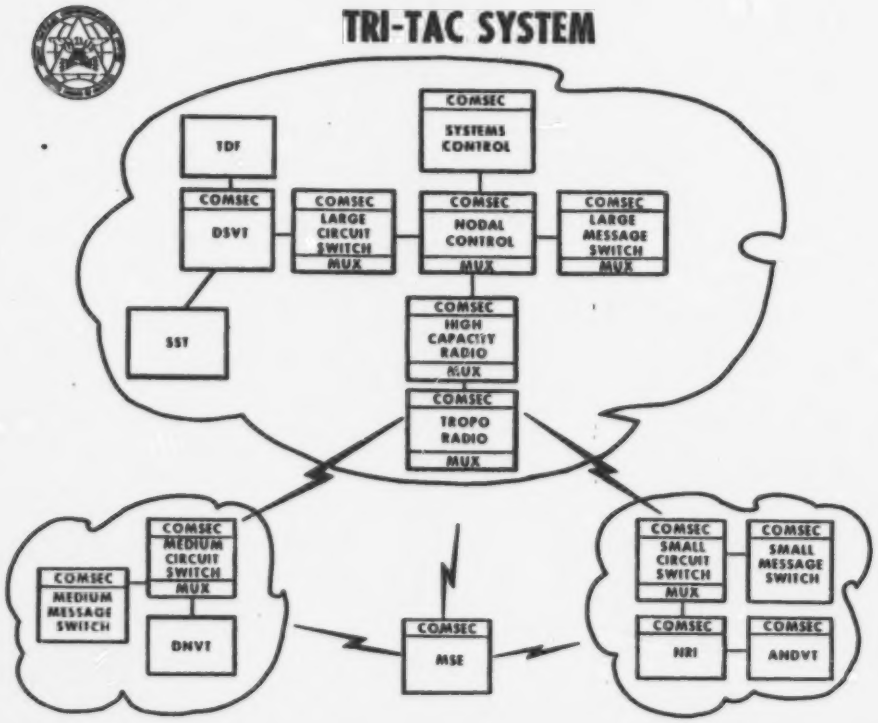
As you can see, the Army has the largest share of the program. The Army is the largest user of all of the pieces of equipment within the program.

With regard to the National Security Agency, while they only have one line Notro as COMSEC; it is the largest COMSEC R. & D. effort ever undertaken by the National Security Agency.

I will use this device to provide you with an explanation of the relationship between and among the pieces of equipment and to show you the fiscal year in which these pieces of equipment are being procured or are scheduled to be procured. We have here the user side of the program which is a tactical digital facsimile; the digital secure voice terminal, which is a secure telephone; single-subscriber terminal, which is the record copy entry device that will be used both by the subscriber himself, the user, and within our communications centers. We have switches, large message switches, large circuit switches; medium size, medium capacity switches both circuit and message, and we have the small switching capability.

We have two radio programs, the tropospheric scatter radio and the high capacity radio which is sometimes called an "up the hill-down the hill" radio, or whatever name is used, the high capacity radio will do the trick.

I will try and show you now how each of these will fit into the procurement schedule and provide you pictures of the devices themselves.



Shown here in red are those items which are currently under contract, the large circuit switches, the large message switch with its attendant COMSEC and multiplex equipment. The COMSEC program tracks with the item that it is supporting, so that its development is in line and its procurement is in line with the fielding of these devices.

Mr. STRATTON. I wonder—all you have here is a chart—I do not even know what a message switch is.

General DONAHUE. All right, sir.

Mr. STRATTON. Do I understand that this system means that the Army cannot only communicate with its various units in the field and NATO, but can they also communicate with the Navy and with the Air Force? Can they communicate with the Germans and the British, and the others?

General DONAHUE. Yes, sir. The Air Force and the Army are the largest users of most of the pieces of equipment, and it will work together. The requirements of both of the services have been satisfied within the terms of the joint operation requirements approved by the JCS.

The Navy has a minimum application for this. The Navy per se is generally limited to its Seabee type operations in a ground environment. It also has a responsibility with the Marine Corps to provide that ship-to-shore and on-shore marine communications.

If a service requires a capability, and that capability is within the charter of TRI-TAC, that service's capability is satisfied by TRI-TAC equipment.

Mr. STRATTON. Is this in place now, or is this what we are funding?

General DONAHUE. Sir, what is shown here on the chart in red are the items that are currently in production, under contract.

Mr. LATHAM. Sir, a large portion of the system is still in development.

Mr. STRATTON. What was the IOC?

General DONAHUE. Each of the pieces of equipment has a specific IOC. The IOC for the message switch is in March of 1983. The circuit switch will follow later in the production contract. The high-capacity radio has been placed on contract this year and its IOC will be 1985. It is generally a 2-year production leadtime between the award of the contract and the fielding of the equipment.

Mr. STRATTON. Will you have secure voice, or will it be message?

General DONAHUE. The system is capable of end-to-end security for both voice and data traffic. The telephone, the DSVT is a secure device in and of itself. Each of the other pieces of equipment will provide the capability to encript on a bulk basis the transmission needs and on a circuit basis where not required.

Mr. STRATTON. All right.

STATUS OF TRI-TAC PROGRAMS

IN PRODUCTION OR SCHEDULED FOR PRODUCTION THROUGH FISCAL YEAR 1984

Large circuit and message switches (AN/TTC-39 & AN/TYC-39)—in production (contract awarded September 1980).

COMSEC (for AN/TTC-39 and AN/TYC-39 switches)—in production (contract awarded November 1980).

Net radio interface—in production (contract awarded November 1981).

Short range wideband radio (AN/GRC-144 MOD)—in production (contract awarded December 1981).

Digital group multiplexers—in production (contract awarded March 1982).

Digital tropo radio—Government test complete (production award: April 1982).

Digital non-secure voice terminal—Government test complete (production award: September 1982).

Tactical digital facsimile—in Government test (production award: September 1982).

Communications nodal control element—Government test complete (production award: January 1983).

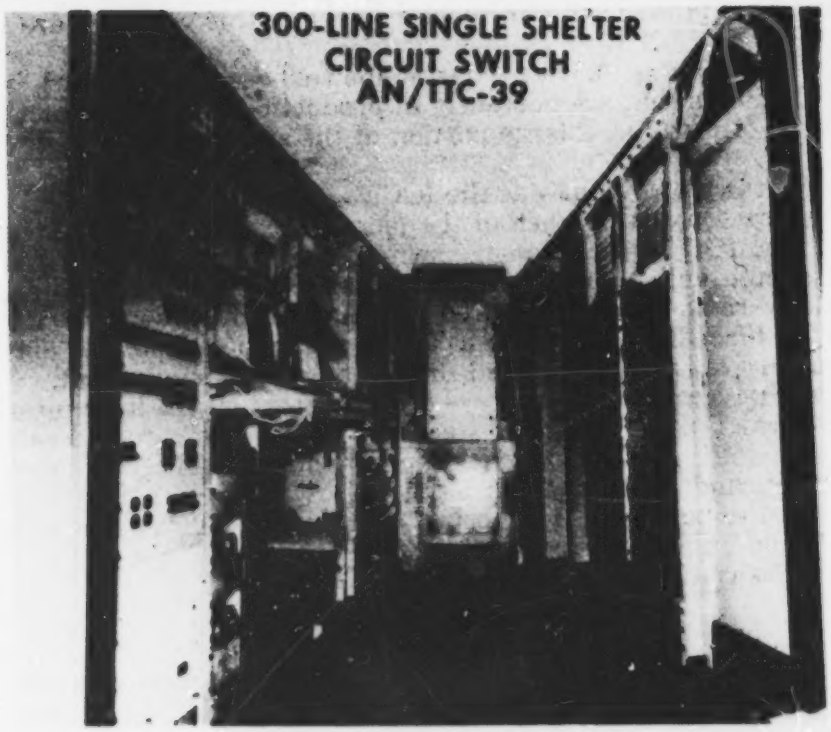
Single subscriber terminal—in development (production award: January 1984).

Unit level circuit switches—in development (production award: June 1984).

General DONAHUE. Shown here in yellow are those things that we just addressed as being under contract. And now in red are those items, the tactical digital facsimile Tropo radio and the digital non-secure voice terminal, a non-secure telephone, that will go under contract in fiscal year 1982.

Here in red are those items that will go into contract by fiscal year 1984. The nodal control which minds the health and welfare of the items of equipment connected to the node is scheduled to go to contract in January 1983; the single subscriber terminal in January 1984, and the medium circuit switch and small circuit switch will go into contract in June 1984. The remaining items in white I will discuss later under the items that are still in development.

This, in narrative form, is the same thing that I just covered with you, with specific award dates. I would like now to take each of these lines of equipment and show you a funding profile and a picture of the device itself.



The first is a 300-line circuit switch. What this does is provide a capability to terminate 300 lines, 300 telephones, and switch them without the use of what we have today, which is manpower-intensive, plug in cord "This is your operator speaking equipment." It is an automatic switch contained in one shelter, mounted on a 5-ton truck. Here is a picture of the truck as it will be produced with the environmental control units contained in the front over the cab of the vehicle.

LARGE CIRCUIT SWITCH - MOUNTED

It is found in the corps in Army, corps and theater in Army. The Marines have no stated requirement and the Air Force use it in their TACC—Tactical Air Control Centers.

Mrs. HOLT. When you say the large circuit switch, does that include the whole thing?

General DONAHUE. When I say the circuit switch——

Mrs. HOLT. If we were buying it, would we be buying this whole thing, or would we just be buying the box with the circuit switch in it?

General DONAHUE. You are going to buy just the box, not the truck.

Mrs. HOLT. I did not know whether it was all together.

General DONAHUE. The truck would be funded separately.

PROCUREMENT FUNDING

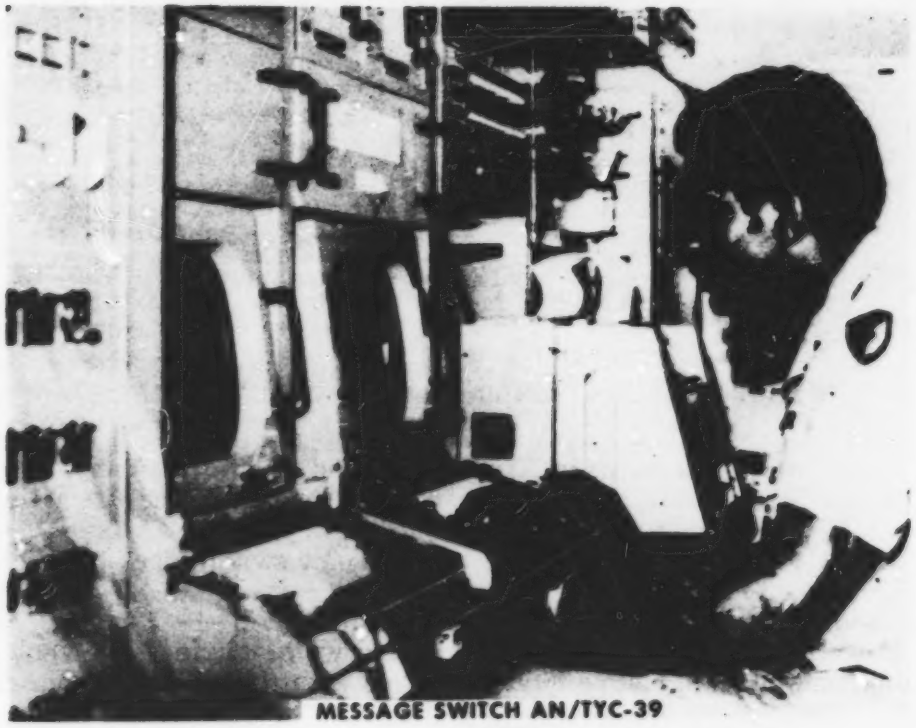
[Large circuit switch (AN/TTC-39)]

	Fiscal year				
	1981	1982	1983	1984	Total through 1984
Dollar (millions)	36.3	102.3	33.1	76.8	248.5
Quantity	7	31	8	23	69
(300 line)	(7)	(22)	(1)	(23)	(53)
(600 line)	(—)	(9)	(7)	(—)	(16)

This is the funding profile. This is a picture of the inside of the message switch. The message switch deals with the switching of message-type traffic. This eliminates the old "bugaboo" of the torn tape relay that you may have heard about in the past where people are up to their knees in torn tape. This fellow is setting there at the traffic service position and is operating the equipment by use of a VDU rather than running around handling all this tape.

Mr. LATHAM. Tell them what a VDU is.

General DONAHUE. Visual display unit, like a television screen.



MESSAGE SWITCH AN/TYC-39

PROCUREMENT FUNDING

[Large message switch (AN/TYC-39)]

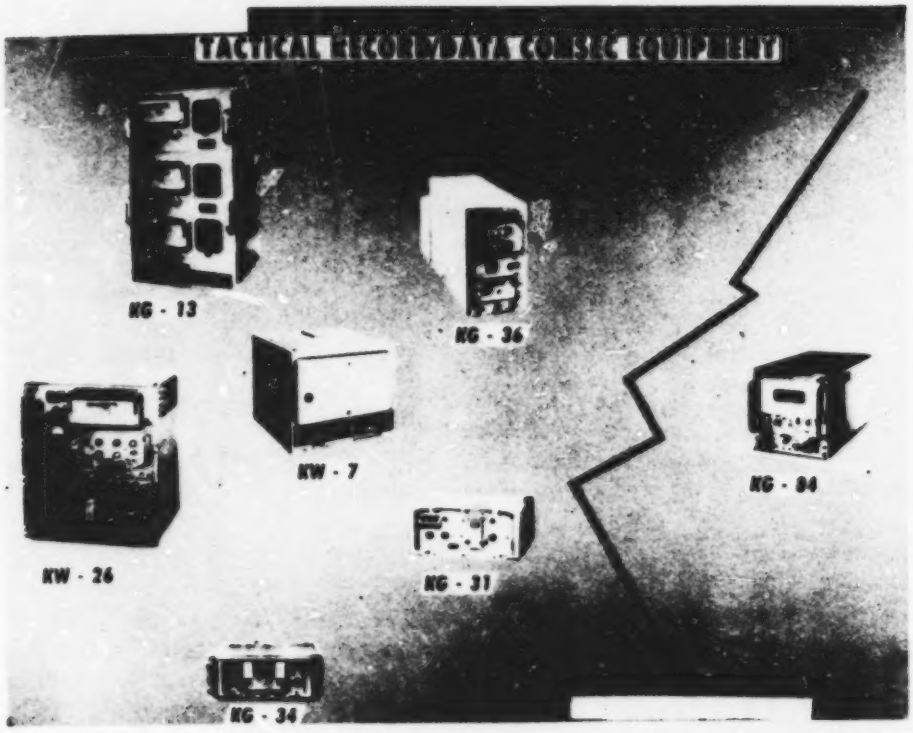
	Fiscal year					
	1980	1981	1982	1983	1984	Total through 1984
Dollars (millions)	50.0	44.8	22.7	16.0	.....	133.5
Quantity	12	10	6	3	.....	31

This is the funding profile for the JYC 39 message switch. The $50 million in fiscal year 1980 were the first procurement dollars spent on the TRI-TAC program. This is a buy-out in the years indicated. There is no further requirement at this time by any of the

services for this device after the quantity procured in fiscal year 1983.

Mr. STRATTON. These are quantities of switches, is that it?

General DONAHUE. Yes, sir, large message switches.



I mentioned earlier the development of the communications security equipment associated with these devices. The Dedicated Loop Encryption Device (DLED) KG-84 is a device that is associated with the message switch. The significance is that the DLED is capable of replacing in almost every application the items of equipment you see on your left. Additionally, the training time to learn to maintain the DLED is but 3 weeks, as opposed to approximately 6 months to learn how to maintain these other devices.

There are other applications for this device outside the TRI-TAC program to a point where the need has been felt to prioritize distribution of the first production units.

This is the digital subscriber voice terminal. It is in fact a secure telephone with a crypto device. It also provides access for the facsimile device or the teletypewriter device into the circuit switch network.

By this I mean the user himself can dial the number on the telephone and have the message sent to where he wants it to be sent within the network without bothering to go through the message center. This is also a good example of the economies that have been achieved within the TRI-TAC program through the cooperation between the services and the National Security Agency. A year ago this device was costed out at $16,000. The services, NSA, and TRI-TAC developed an acquisition strategy that would push the requirements up so we could get a reasonable quantity for a multiyear buy. This contract is about to be awarded and the price appears to be about $4,000.

Mrs. HOLT. Mr. Chairman, may I ask a question? Will all of these, the message circuit switch and the subscriber voice, will all of those be in one place?

General DONAHUE. They will be in a node.

Mrs. HOLT. What is a node?

General DONAHUE. They will be in one place in a configuration. That configuration, on a technical basis, will be managed by a device called the CNED, the communications nodal control element.

Mrs. HOLT. And that is all in one place.

General DONAHUE. Yes; pretty much as it is shown here.

Mrs. HOLT. And somebody out there is receiving it.

General DONAHUE. The Army has projected 12 of these nodes to be in a corps area to provide flexibility and survivability.

Mr. STRATTON. You do not crank it the way we used to do it.

General DONAHUE. No, sir.

Mr. LATHAM. You could think of it this way, if you drive around and every once in a while you see one of those buildings that is all brick and has no windows, and it says "Bell" on it, or A.T. & T. or something. That is a switching center typically. So, what you are seeing here is an Army version of a mobile, survivable, switching center that is mounted on wheels that will be sitting somewhere. It can move very quickly. Then connecting that node or switching center to another one will be some form of a radio transmission device. General Donahue is showing this. Typically, it could be a Tropo Scatter radio system, or it could be wires if you wanted to string them. It could be even fiber optics, whatever, in the future.

But those nodes, then, are connected together, and off those nodes are a series of telephones that go all the way down to various commanders and users, or all the way up echelon to other people.

So, you have a secure capability to talk and switch data around in the field Army and the Air Force.

Mrs. HOLT. It is the fact that we have neglected this so long is probably why we know so little about it.

Mr. LATHAM. Yes, ma'am. It is a complicated area. So, do not hesitate to ask.

Mr. STRATTON. A digital voice terminal sounds like a contradiction in terms, either it comes in digital form or in voice.

Mr. LATHAM. Well, the world is moving to so-called digital technology, and as a person speaks into the phone instrument, the electronics right behind where your voice goes in, so to speak, takes your voice and chops it up into little bits, called digital bits, ones and zeroes, and transmits that, then as a series of ones and zeroes over the communications medium.

Now, by doing it this way you can do a number of things in the handling of those bits. First of all, it is very easy to encrypt that type of information, much, much easier in fact than with so-called analog voice, just taking your voice and literally transmitting it.

Second, you can put various error-correcting and coding schemes on there so that any kind of distortion of the voice that happens over the transmission medium or from enemy jamming can be better taken care of. So, it lends itself to very high-speed transmission and mixing lots of voices together in a switch and moving the information much quicker.

In this country, our phone system is moving to digital, as is our television, for example. Pretty soon, in about 1987, your television set will in fact be a digital receiver.

Mr. STRATTON. Well, does this come out in voice at the other end?

Mr. LATHAM. At the other end you have a device that takes the bits and translates them back into recognizable voice. First of all, we decrypt them and that brings it back into a clear text stream of bits. As you look at it you cannot read it, but then there is a device that turns the bits back into something you can hear; yes, sir.

Mr. STRATTON. Sort of a high-powered, high-technology scrambler?

Mr. LATHAM. Yes, sir, in a way. In fact, one of the other interesting things is, with this digital technology you can send voice very economically. You do not need all that many bits to send a voice conversation. So, you can actually start using less band width on the radios to do that and still get intelligible voice information. It has an economy in it as well.

Mr. STRATTON. You are not suggesting the television screen will be filled up with the zeroes and ones.

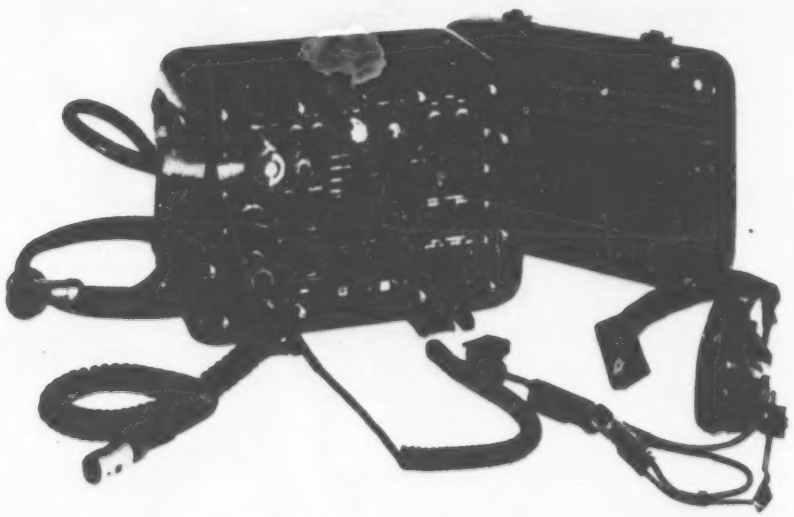
Mr. LATHAM. They will go broke if they do that.

Mr. STRATTON. The electronic signal will come in that way.

Mr. LATHAM. And be converted. The reason for doing that, in fact, it will provide you a much, much better television picture than you get today. The color can be much more precisely controlled; the contrast can be. And a lot of correction and coding can be done so you get a better TV picture.

Mrs. HOLT. I can hardly wait.

Mr. STRATTON. All right, go ahead, General.



C-6709 BASIC NET RADIO INTERFACE DEVICE (BNRID)

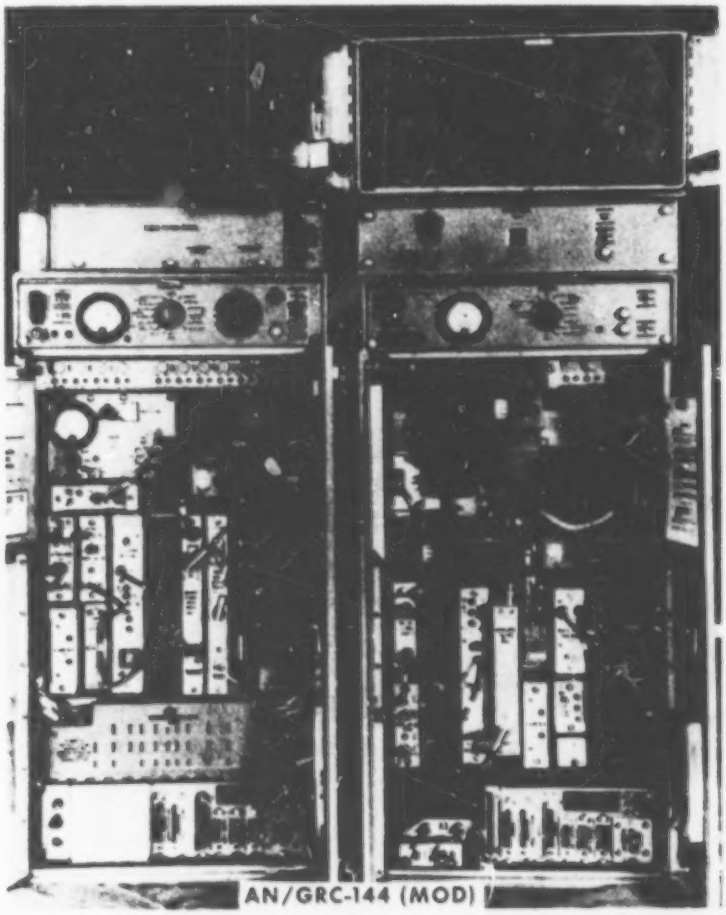
General DONAHUE. The next item I will discuss is the Basic Net Radio Interface Device. Now, what this does is provide the mobile user—whether he be on foot, in a vehicle on land, or in an aircraft—access into the static network. This is an analog device and is a one-time buy to meet an urgent service requirement pending the availability of the TRI-TAC secure digital net radio interface device.

PROCUREMENT FUNDING

[Net radio interface (C-6709)]

	Fiscal year				
	1981	1982	1983	1984	Total through 1984
Dollars (millions)	2.1				2.1
Quantity	150				150

This is the dollar amount and the quantity involved, and it is a one-time buy, as I said.



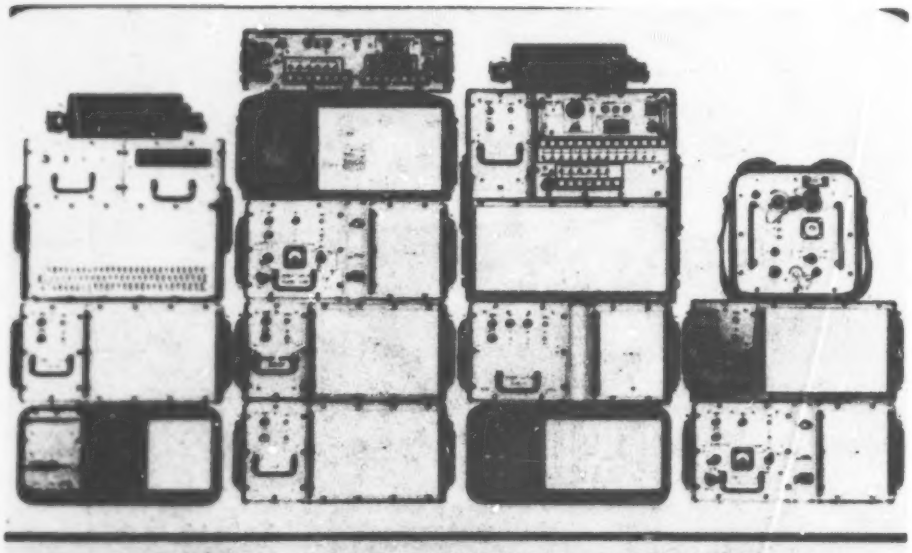
This is a picture of the innards of the radio I spoke of earlier, the GRC-144 or the "up the hill-down the hill radio." The significance of this is that we did not develop a new radio in order to accommodate the requirement. We took an existing radio and applied an applique unit and some other fixes to it to accomplish the necessary end result.

PROCUREMENT FUNDING

[Short range wideband radio (AN/GRC-144 MOD)]

	Fiscal year			
	1982	1983	1984	Total through 1984
Dollars (millions)	4.8	16.7	6.1	27.6
Quantity	40	423	113	576

The funding profile then reflects the cost of the kits to modify the radio and the cost of the modification in the Army depot system.



DIGITAL GROUP MULTIPLEX EQUIPMENT

Digital group multiplex (DGM) equipment is a family of equipment. Multiplex equipment allows you to pass more than one voice over the same pair of wires or over the same radio frequency. This family can either be placed in a vehicle, in a shelterized environment or thrown on the ground outside of a shelter.

PROCUREMENT FUNDING

[Digital group multiplexers and Army radio assemblages]

	Fiscal year				
	1981	1982	1983	1984	Total through 1984
Dollars (millions)	$17.3	$26.7	$89.0	$53.6	$186.6
(DGM)	(14.4	(25.9)	(53.0)	(43.0)	(136.3)
(Army radio assys)	(2.9)	(.8)	36.0)	(10.6)	(50.3)
Quantity:					
DGM	(1)	(1)	(1)	(1)	(1)
Army radio assys	12	4	108	30	154

[1] Various quantities; multiple items.

This is the funding profile. The DGM contract per se will provide over 6,000 boxes. It is a 3-year, multiyear with fiscal year 1981 and 1982 rolled together.

Some of the items of equipment in the Army radio assemblies, the multiplex equipment that exists in those inventory pieces of equipment, will be pulled out and replaced by the new multiplex equipment. So, it will be modernized rather than just replaced.

DIGITAL TROPOSCATTER RADIO TERMINAL AN/TRC (V) 2

The digital troposcatter radio comes in two versions. This provides our long-haul capability between the nodes that we spoke of earlier, between the concentrations of communications equipment. This particular model is the V-2 model—it has a nominal range of

150 miles and has the capability for 64 channels and it has onboard COMSEC equipment.

Mrs. HOLT. Mr. Chairman?

Mr. STRATTON. Yes.

Mrs. HOLT. If you get the large circuit switch and the large message switch and the other things in 1983 and the control nodes in 1984, what are you going to do with the switches? Can you use them?

General DONAHUE. Yes, we can use them, ma'am. The total capability of the switches will not be realized until such time as you do get the nodal control. It is a limitation on the number of multichannel terminations that can be made on the switch. The operator in the switch will have to do things that would commonly be the responsibility of the operator in the communications nodal control.

Mrs. HOLT. Why are you getting only some of it? Is it just the state-of-the-art?

General DONAHUE. Some of it has to do with the timing of the development effort, and some of it has to do with the availability of procurement funds. There were no funds available in fiscal year 1982.

Mr. CHASE. Also, to answer part of Mrs. Holt's question, we phase the whole system in slowly, not just wreck the total communications system by trying to emplace this new system at one time.

General DONAHUE. That is true, and that is a function of both the scheduling of the development effort and also the interoperability that we have built into the system where you do not have to swap out the entire system.

Mr. LATHAM. This is really kind of analogous to what A.T. & T. and the Bell System has gone through over the last several years. Prior to the invention of the transistor they had just thousands and thousands of mechanical relays and vacuum tubes in these switching centers. Once the transistor was perfected and found to be reliable over these many years, at a replacement running $10 billion to $20 billion a year, they have been spending to modernize the telecommunications phone system in this country. They swapped out entire switches and so on.

What we have to do with this TRI-TAC program is a very similar adventure. We are considered, however, just like the Bell System was—you have to be backward compatible with all that old stuff that is there and phase it in smartly.

So, that has been part of the problem. It is a difficult job because we are gradually moving from one kind of a way of doing business to another in a very different kind of technology. It is partly that and partly funding.

Mrs. HOLT. Thank you.

Mr. STRATTON. If we were to get into a conflict in the Persian Gulf, would we be able to extend this system—which I gather is designed primarily for the NATO area—would we be able to extend that more into the Arabian Sea?

Mr. LATHAM. Yes, sir, absolutely. We would take some of that equipment right with us, take that troposcatter radio with us and establish a node-to-node communications system right within that theater. That is part of the RDJTF equipment that we will eventually have. Yes, sir.

General DONAHUE. It is all air transportable on a C–130.

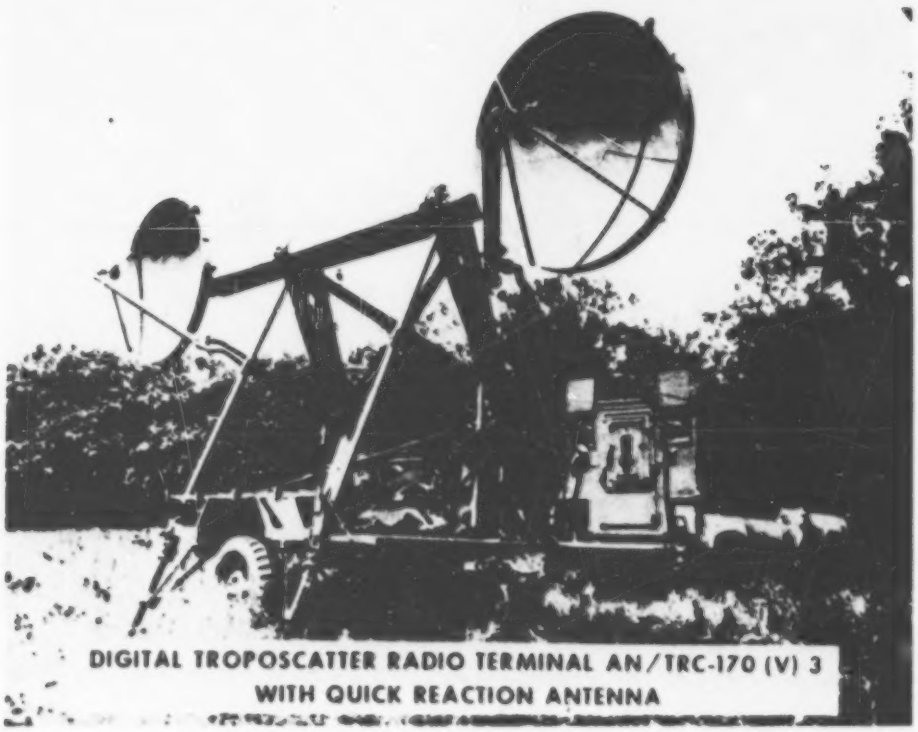
Mr. STRATTON. You would have the nodes down at Riad?

Mr. LATHAM. As he mentioned, the shot on this one is about 150 miles. With tropo you are limited to on the order of 200 miles maximum, without a relay in there somewhere. But you could put relays back to back and go farther.

Mr. STRATTON. You would almost have to use your strategic communications.

Mr. LATHAM. The backup is HF; yes, sir. The Saudis, by the way, are buying a very expensive tropo-communications system that links up all the major centers in their country with very, very large troposcattered communications—much, much bigger than this.

General DONAHUE. The second in the family of the tropo radios is the V–3 version contained in a 1½-ton truck. It has a normal range of 100 miles. It also has 64 channels and on-board COMSEC.



DIGITAL TROPOSCATTER RADIO TERMINAL AN/TRC-170 (V) 3
WITH QUICK REACTION ANTENNA

Pictured here is the quick erection antenna that allows the device to be placed on the air within 1 hour.

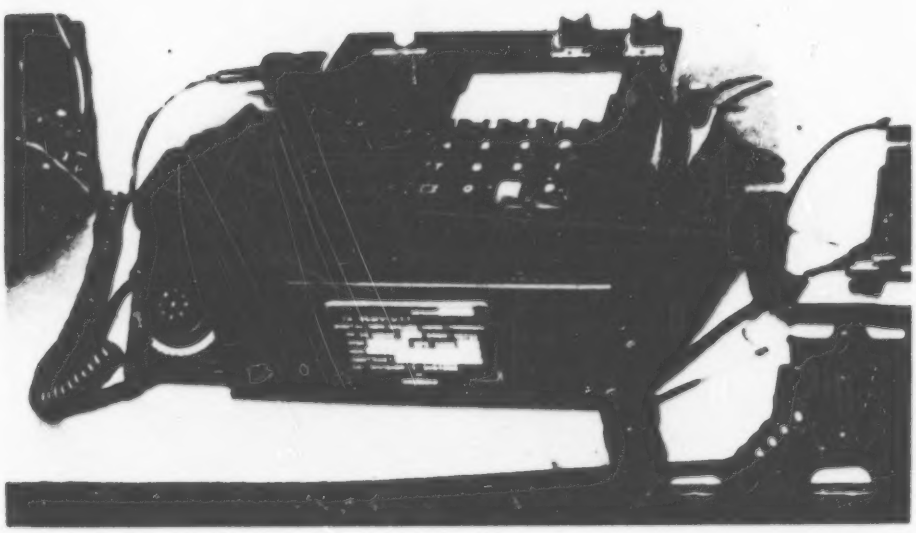
PROCUREMENT FUNDING

[Tropo radio terminal (AN/TRC-170)]

	Fiscal year				Total through 1984
	1981	1982	1983	1984	
Dollars (millions)	$46.2	$55.3	$107.3	$112.4	$321.2
Quantity	11	33	53	56	153
(V2)	(6)	(24)	(26)	(36)	(92)
(V3)	(5)	(9)	(27)	(20)	(61)

This is the funding profile for the TRC-170. This has been an arduous negotiation between the Air Force and the contractor and it is finally to the point where they have agreed to price and they need now to sign the papers. It is 3-year multiyear with fiscal year 1981 folded into fiscal year 1982.

DIGITAL NON-SECURE VOICE TERMINAL TA-954(V)1/TT



The digital non-secure voice terminal is a digital phone that will be made available to those users who do not need to have COMSEC covered telephones. It will be in places like in the motorpool, the guard posts and other adminisistrative functions.

PROCUREMENT FUNDING

[Digital non-secure voice terminal (TA-954)]

	Fiscal year			
	1982	1983	1984	Total through 1984
Dollars (millions)	5.2	2.2	5.5	12.9
Quantity	4,376	2,100	5,600	12,076

This is the funding profile for the nonsecure digital telephone. We have developed this on a competitive basis between two contractors. Government tests have been completed and it appears from the preliminary results that we will be able to go with a competitive procurement in this fiscal year.

Mr. STRATTON. Who are the companies which you turned to?

General DONAHUE. ECI is one company and the other escapes me. The second company escapes me, sir.

Mr. STRATTON. Is Rhom in there?

General DONAHUE. It is not, no, sir. I can provide you that.

[The following information was received for the record:]

The two development contractors on the Digital Non-Secure Voice Terminal are General Atronics Corporation, Philadelphia, PA., and ECI Division of E-Systems, St. Petersburg, Fla.

Mrs. HOLT. Would we be interoperable with that Saudi system?

Mr. LATHAM. Yes, ma'am. What is happening is-that is quite an interesting story in itself. The [deleted].

Then, the [deleted] that has yet to go under contract.

By the time they are complete they will have spent [deleted] easily. It is being designed such that we could interoperate with it. They will use different COMSEC, so that we will have to provide arrangements to either we have to buy that same COMSEC equipment—which is [deleted] COMSEC equipment-or we will operate without COMSEC, or we will have to at that time allow them to use U.S. COMSEC equipment.

But in terms of frequencies, types of equipment and all the standards, the data links and the message standards, and so on, it is U.S. format.

Mrs. HOLT. It would be possible?

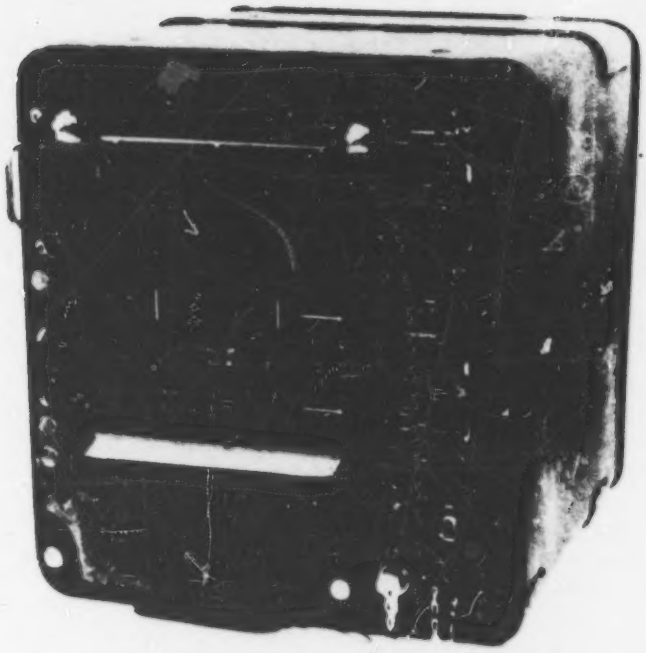
Mr. LATHAM. Yes. It is all specified U.S. format.

Mrs. HOLT. The [deleted] approved that?

Mr. LATHAM. Probably so, I do not know.

Mrs. HOLT. Thank you.

Mr. LATHAM. Yes, ma'am.



TACTICAL DIGITAL FACSIMILE (UXC-4)

Mr. STRATTON. General Donahue, the TRI-TAC has as one of its elements the tactical digital fascimile you have up there on the viewgraph now. You plan to award contracts totaling $18 million in fiscal year 1983 for that. We understand that the machine actually had some difficulties in testing which resulted in redesign or changes in some of the features, including a complete design of a new power supply, all of which resulted in a program slip of 9 months at an additional cost of $1.2 million.

Would you describe to us what your schedule is for incorporating and testing these changes and redesigns before you initiate your production?

General DONAHUE. Yes, sir. The TDF is in OT-2. It is in operational OT test 2 because of deficiencies which we did discover in the first phase of testing.

The correction of the deficiencies is in two parts. One, the things that could be fixed readily within a short period of time. Other fixes are required—recasting of the frame case, but the solution was known. The recasting itself would take a year. None of the services at the time of the production decision would vote to go to production with this device.

But they were willing to re-test it to see what it did with the short-term fixes that could be applied. We put the fixes in, and we started the OT-2.

The test results, preliminary as they may be, indicate a far better product now than as in the first phase—which one might expect. Some of the problems that occurred in OT-2 had not occurred in OT-1 and vice versa. One of those is the power supply.

The power supply was a significant problem in the first phase of testing. It has not been chalked off as a deficiency this time.

Now, the contractor is looking at redesigning that power supply for several reasons—not the least of which is produceability and maintainability by the soldier.

The subcontractor was given what space was left in that box to put in the power supply. It came out to be a strange shape. But it has not failed this time after they put in the necessary quality control.

If we pass the OT-2 and a favorable-production decision is reached and the contract is awarded, we have several milestones that will allow us to verify that in fact the contractor has done what he said he would do, and that the device does in fact work.

It will be more than a normal first-article testing. It will be an examination of the drawings at various stages of completeness and we will be satisfied that he, in fact, has the solution at hand to go to a production contract. If he does not have it, we will not go.

Mr. STRATTON. Are you part of a DSARC process on something of this kind that the subcommittee has to sign off on?

General DONAHUE. Sir, I will have to answer that in two parts. If the item of equipment does not reach the DSARC threshold then, no, we are not. If it does reach a DSARC threshold, as a preliminary function, before it can go to the DSARC the representatives of the services have to meet to evaluate the independent testing and vote as to whether or not they wish to go to production. Then the process rolls up into either a service review or a defense review. It need not go all the way to defense, it could just be limited to the Army or to the Air Force staff.

So, it is another step in the process.

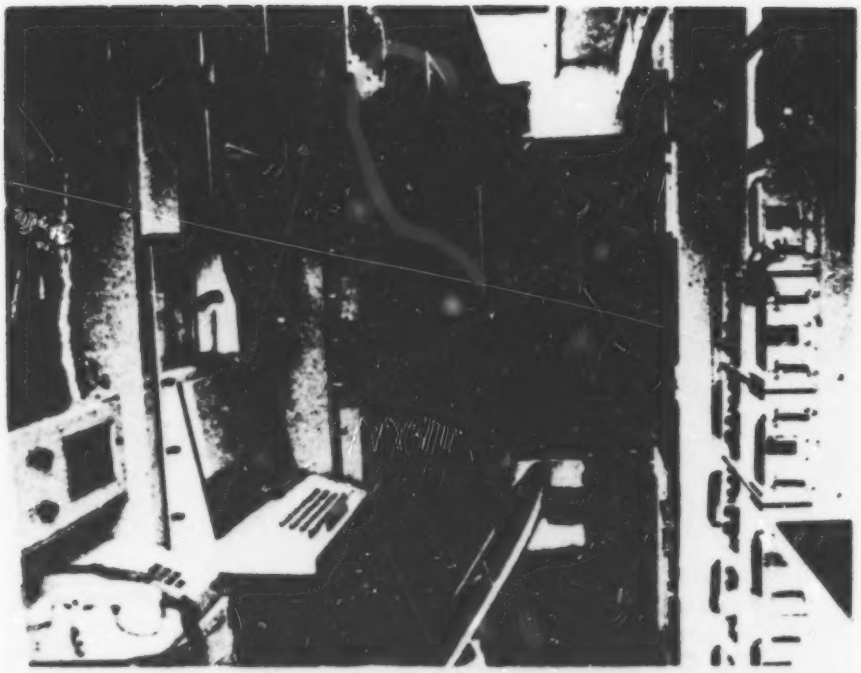
Mr. STRATTON. Thank you.

PROCUREMENT FUNDING

[Tactical digital facsimile (AN/UXC-4)]

	Fiscal year			
	1982	1983	1984	Total through 1984
Dollars (millions)	8.1	16.8	40.0	64.9
Quantity	171	294	753	1,218

General DONAHUE. Now, the funding profile we discussed.



COMMUNICATIONS NODAL CONTROL ELEMENT AN/TSQ-111

This is the inside of the CNCE, a type III CNCE, the smaller of the communications nodal control element, two devices whose function it is to mind the health and welfare of the equipment at the node or concentrations of communications equipment.

This is the outside view with its attendant pallet with power supply and environmental control units. And this is the funding profile for that device. We expect to get a production decision in September and a production award in January.

PROCUREMENT FUNDING

[Communications nodal control element (AN/TSQ-111)]

	Fiscal year			
	1982	1983	1984	Total through 1984
Dollars (millions)		131.5	109.2	240.7
Quantity		25	22	47
Type I		(16)	(9)	(25)
Type III		(9)	(13)	(22)

The UGC-137, a member of the single subscriber terminal family is a device that will provide the user the capability to enter into the record traffic network. There are other members of the family that provide the regular paper record of the teletype-type traffic or, in this case here it is a plasma display of information. The funding profile is as shown here:

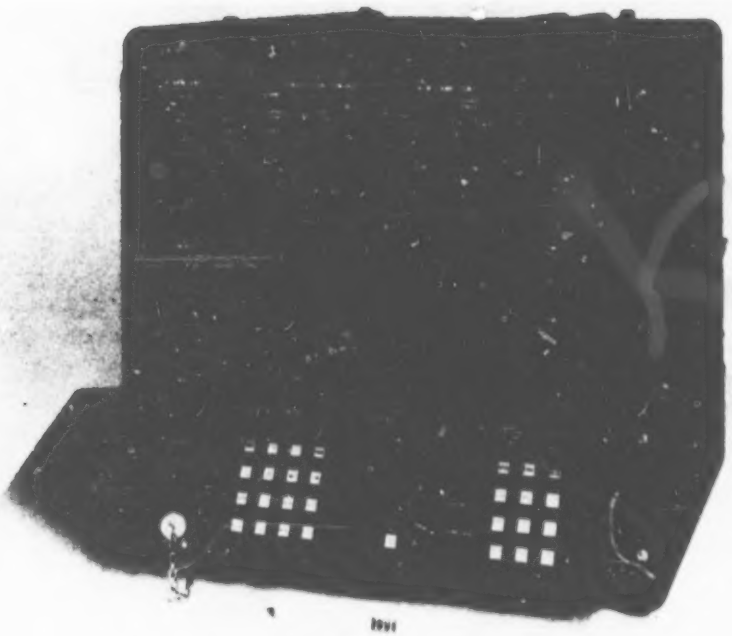
PROCUREMENT FUNDING

[Single subscriber terminal (AN/UGC-137)]

	Fiscal year			
	1982	1983	1984	Total through 1984
Dollars (millions)			14.5	14.5
Quantity			258	258

CIRCUIT SWITCH AN/TTC-42

This is the inside of the medium circuit switch, the TTC-42. It has capability for 150 lines or 75 lines. The operator, or the person shown is sitting at the maintenance console, in the dial-assistance position, where you will get the information or operator assistance, is that small box to the left of the person. It can be remounted outside of the shelter, either on the ground or in a tent.



UNIT LEVEL CIRCUIT SWITCH SB-3865

This is a small level unit circuit switch, the SB-3865. It is capable of 30 lines and can be multiplexed up to 90. It is found at the battalion level in a division of the Army and Marine Corps.

PROCUREMENT FUNDING

[Unit level circuit switches (AN/TTC-42, SB-3865)]

	Fiscal year			
	1982	1983	1984	Total through 1984
Dollars (millions)		1.0	48.9	49.9
Quantity			144	144
(AN/TTC-42)			(34)	(34)
(SB-3865)			(110)	(110)

This is the funding profile. $1 million in fiscal year 1983, is the first element of the logistics support cost that the Marine Corps will be spending for the system.

STATUS OF TRI-TAC PROGRAMS IN DEVELOPMENT OR AWAITING DEVELOPMENT

Advanced narrowband digital voice terminal (CV-3591)—In development; Government test in fiscal year 1983.

Unit level message switch (AN/GYC-7)—In development; Government test in fiscal year 1984.

Communications system control element (AN/TYQ-16)—In development; Government test in fiscal year 1986.

Modular tactical communications center—Requirements and cost effectiveness studies in progress; no schedule yet established.

Mobil subscriber equipment—Program being evaluated; no schedule yet established.

Short range wideband radio—Program being re-evaluated; no schedule yet established.

(Above programs include associated COMSEC where applicable.)

This is the status of the TRI-TAC program equipment in development or awaiting development. The advanced narrow-band digital voice terminal is a joint development with the Navy and the National Security Agency and will provide access into such pieces of equipment as satellites and HF.

The Unit Level Message Switch is a companion to the Unit Level Circuit Switch and is following behind. It is taking advantage of the development effort of the circuit switch in that over 50 percent of the components in this device are common to the circuit switch.

Communications System Control Element, AN/TYQ-16 is the device that provides control over the health and welfare of the entire network. It tells the network when people are coming in or leaving it, when to put up tropo systems, radio systems, when to take them down, when to move them. It manages the network as opposed to technical control that is exercised by the CNCE.

The Modular Tactical Communications Center is in the process of being re-examined by the Army to see if that is really what they need to have. The same applies to Mobile Subscriber Equipment, whether or not we need to go from a zero-based full-scale engineering development or should we take available items of equipment and put them together to satisfy the requirements. The Short Range Wideband Radio, is presently under review by the services to determine what the actual requirements are.

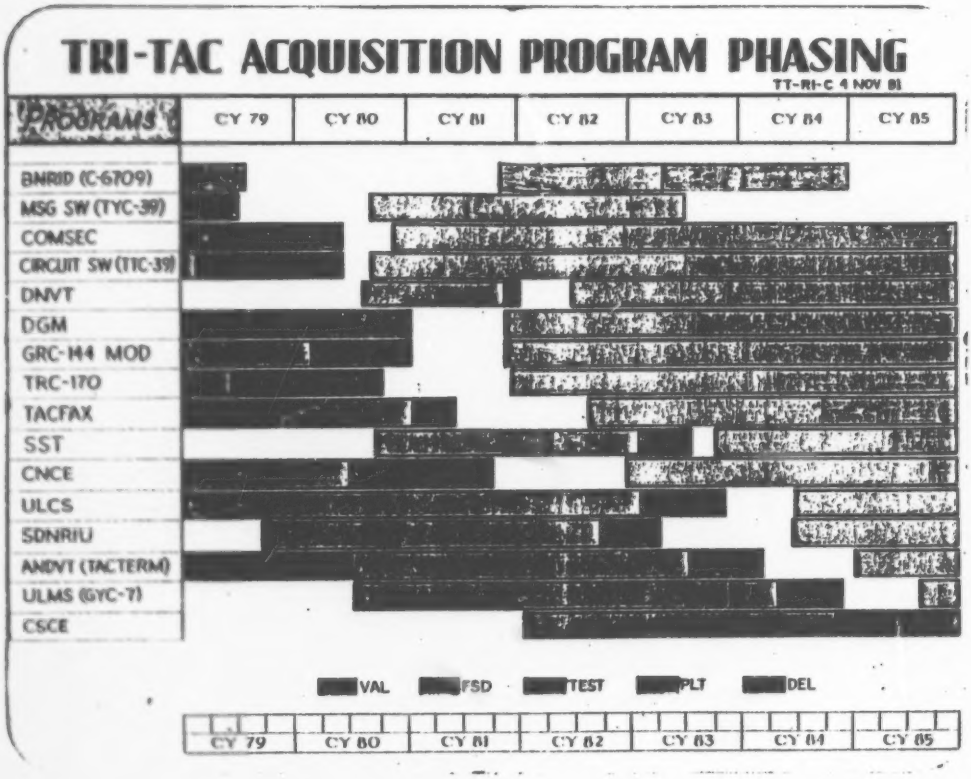
TRI-TAC PROGRAM; SERVICES' PROCUREMENT FUNDING PROFILES THROUGH FISCAL YEAR 1984

[in millions of dollars]

	Fiscal year					
	1980	1981	1982	1983	1984	Total through 1984
Army	34.2	97.8	111.0	288.1	277.1	808.2
Air Force	12.3	37.9	116.0	138.0	146.7	451.8
Navy				7.0	5.2	12.2
Marine Corps				1.0	62.4	63.4
Subtotal (PE28010)	46.5	135.7	227.9	434.1	491.4	1,335.6
JCSE	3.5	13.9	1.5	1.5	8.0	28.4
Grand total	50.0	149.6	229.4	435.6	499.4	1,364.0

NOTE.—Excludes COMSEC and support equipment (trucks, trailers, generators, etc.)

In summary, this is a funding profile by service for the TRI-TAC program. As you can see beginning with the initial expenditure of funds in fiscal year 1980, the trend has been now upward which reflects the availability of equipmemt out of the R. & D. program and also the confidence that has been placed in the program when we deployed the TYC-39 switch to Europe. It has participated in corps exercises.



This slide gives you an idea of where we are in the program. The yellow line is of significance because that is the production lead time. That is the time it takes from the award of the contract to equipment IOC available for the equipment. We have done a lot in the area of the multiyear buys, but we have not been too successful in driving down that production lead time. That is an area we must concentrate on. On the average 2 years after you let the contract that the equipment comes on the line.

TRI-TAC PROGRAM OUTLOOK

Production (fiscal year 1982-83)—8 equipment programs (plus associated COMSEC) in production in fiscal year 1982. 1 additional equipment program in production in fiscal year 1983.

Development and production (fiscal year 1983 and beyond)—Complete development on 4 equipment programs (including associated COMSEC) during fiscal year 1983-84. Start production on 2 equipment programs in fiscal year 1984. Start development on 3 equipment programs (including associated COMSEC) during fiscal year 1983-84.

This is our outlook, eight items of equipment in production now, an additional item in production in 1983.

We have done what we set out to do and that was achieve interoperability. We have, as I explained earlier, achieved some business successes in the economic order quantity of devices and have significantly reduced the life-cycle cost by having a single service responsible for the support for the equipment.

That concludes my presentation. If you have any additional questions I would be happy to answer them.

WRITTEN STATEMENT OF MAJ. GEN. ROBERT J. DONAHUE

Introduction: Mr. Chariman, I am pleased to provide a report on the Joint Tactical Communications (TRI-TAC) Program. The following is a brief description of the objectives and scope of the program being managed by the TRI-TAC Office, as well as a brief summary on the Services' planned procurement of individual TRI-TAC equipment. I will also cover our continuing liaison with the Defense Communications Agency and the application of TRI-TAC equipment to NATO use.

As stated in the Secretary of Defense's Annual Report to the Congress for fiscal year 1983, the TRI-TAC Program is one of the key activities in the Command, Control and Communication area being pursued to enhance interoperability, survivability, and restorability of essential C^3 functions. In his report, the Secretary also noted that the TRI-TAC Program had passed a significant milestone by entering into production on the first group of equipment acquisitions.

The TRI-TAC Program objectives are to design, develop and acquire tactical comminications equipment responsive to joint requirements, achieve interoperability with new and existing equipment, and eliminate duplication in development of tactical communcations equipment. The accomplishment of these objectives will significantly enhance command and control of our military forces. These improvements will be reflected in greater flexibility in deployment, more rapid dissemination of information, capability for end-to-end security, increased survivability, and reduced manpower requirements.

Equipment being developed and procured in the TRI-TAC Progam includes automatic message and circuit switches, communications control facilities, radio transmission equipment for short- and long-range tactical use, a family of common-use digital militiplex and various terminal equipment for secure and non-secure voice, record, data and facsimile access to the switched networks. Additionally, communications security (COMSEC) equipment is being acquired in parallel with the TRI-TAC equipment with which it will be integrated.

Combinations of TRI-TAC developed and acquired equipment and inventory equipment will permit tactical communications networks to support a broad range of mission requirements for theatre operations. The TRI-TAC system will interoperate with single-channel radio nets employed by the tactical forces, the overseas Defense Communcations System (DCS), the NATO integrated Communications System and tactical systems of our NATO allies, and with commercial networks.

With the establishment of the TRI-TAC Office, a comprehensive, long-range program was undertaken and is being implemented to achieve the phased development and fielding of the individual items of equipment which comprise the TRI-TAC "family" of interoperable equipment.

The first major acquisition was the AN/TTC-39 family of circuit and message switches, the "keystone" equipment in the TRI-TAC Program, and its associated communications security (COMSEC) equipment. In 1980, the AN/TYC-39 message switch successfully completed testing, proceeded to DSARC III and received a positive production decision on March 25, 1980. The AN/TTC-39 circuit switch completed test and received a positive DSARAC IIIA production decision on July 9, 1980. On September 30, 1980, a 3-year multi-year production contract, with a one year option, for both switches was awarded to the development contractor. The cost of the initial production program for the period fiscal year 1980 through fiscal year 1982 is $256.1M. This procures a total of 66 switches (38 circuit, 28 message switches). The fiscal year 1983 program of $49.1M will procure 11 switches (8 circuit, 3 message switches). The first production units are scheduled to start Production Acceptance Test and Evaluation (PATE) in calendar year 1982, with first deliveries of message switches scheduled for early calendar year 1983. In November 1980, The production contracts for the COMSEC equipment for the AN/TTC-39 family of switches were awarded. These contract awards signalled the entry of the TRI-TAC Program into the production phase.

As to the current fiscal year (fiscal year 1982), production on the AN/TTC-39 family of switches and their associated COMSEC continues. Production contracts have been awarded on the following equipment: The C-6709 net radio interface; digital group multiplexers; and the AN/GRC-144 modification. We plan on awarding production contracts in fiscal year 1982 on the AN/TRC-170 digital tropo radio (April 1982), TA-954 digital non-secure voice terminal (September 1982), and the AN/UXC-4 tactical digital facsimile September 1982).

Turning to the fiscal year 1983 procurement request, the Services' total request is for $435.6 million (including $1.5 million for the Joint Communications Support Element-JCSE), which will support the procurement of the equipment identified above, certain support and other equipment, plus the AN/TSQ-111 communications nodal

control element which will enter production in fiscal year 1983. This amount excludes the cost of COMSEC and support equipment such as trucks, trailers, and generators. The Army request is for $288.1 million which will support the procurement of additional quantities of the AN/TTC & TYC-39 switches ($44.4 million), digital non-secure voice terminals ($2.1 million), the communications nodal control element ($93.5 million), the tactical digital facsimile ($5.8 million), the digital tropo radio ($39.6 million), digital group mutiplexers ($44.7 million), and Army radio assemblages ($36.0 million); and to fund the modification of the AN/GRC-144 ($16.7 million) and procurement of support items ($4.3 million). The Air Force fiscal year 1983 request is for $138.0 million which will support the procurement of the AN/TYC-39 message switch ($4.7 million), the communications nodal control element ($38.0 million), the digital tropo radio ($67.7 million), digital group multiplexers ($8.3 million, which includes the cost of digital tropo radio and communications nodal control element/digital group multiplex equipment), the tactical digital facsimile ($3.0 million), and support items ($16.3 million). The Navy fiscal year 1983 request is for $7.0 million which will support the procurement of the tactical digital facsimile. The Marine Corps fiscal year 1983 request is for $1.0 million which will support the production of the unit level circuit switches (AN/TTC-42 and SB-3865) planned for fiscal year 1984. The JCSE fiscal year 1983 request includes funds for the digital non-secure voice terminal ($0.1 million) and TRI-TAC support equipment ($1.4 million).

In addition to the above fiscal year 1983 procurement funding, NSA and the Services are requesting procurement funds for TRI-TAC related COMSEC and support equipment such as trucks, trailers, and generators. The Services' COMSEC requests are for procurement of COMSEC devices to meet the production of the TRI-TAC end item equipment. NSA's funding request is for support items for TRI-TAC COMSEC being procured for the Services.

The TRI-TAC Office continues to work closely with the Defense Communications Agency to insure improved interoperability across the DCS/Tactical border. Significant improvements in interoperability with AUTODIN, AUTOVON, and AUTOSEVOCOM I will result with the fielding of the AN/TTC-39 family of switches and associated COMSEC equipment. Additional work is underway in the area of digital transmission interconnection and there is continuing dialogue between DCA and the TRI-TAC Office on the future Secure Voice Improvement Program. The bottom line is that fielding of the TRI-TAC system will provide our tactical fighting units with improved interoperability with strategic DCS.

Our interoperability efforts in NATO are bearing fruit. Our NATO Interface Unit conforming to the Standardization Agreement (STANAG 5040) that provides for automatic analog interoperability in the near-term is now in production with AN/TTC-39. Sufficient quantities are being procured to provide the capability also for the AN/TTC-38 which is currently in the field. Our work on the family of Standardization Agreements (nine of them) that will control secure digital multichannel interoperability is progressing well. I would hope that the ratification process will be completed in about a year. We are making excellent progress on this NATO post-85 requirement because of our work over the years with the EUROCOM nations and with France.

In conclusion, fiscal year 1983 will be a significant year for the TRI-TAC Program in that a total of nine equipment acquisitions (plus their associated COMSEC) will be in production. The award of the digital group multiplexer contract during fiscal year 1982 is also of particular significance because it will permit the Army to proceed with the procurement of radio assemblages which require the availability of the multiplex equipment. Also of major significance is that the AN/TTC-39 family of switches and their associated COMSEC items will undergo production testing, deliveries will commence, and initial deployment of the switches and COMSEC to the field will occur during 1983. I look forward with a great sense of pride and accomplishment to the actual deployment of this and other TRI-TAC equipment which is so essential to effectively supporting the military forces and our national military strategies in future years.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. We hear that the National Guard Forces need more than $40 million in communications equipment. What do you think the situation is in the Guard, what funding is in the fiscal year 1983—I do not know if I should ask you for that, but since you are talking about it, what are we going to do to redress that deficiency?

Mr. LATHAM. Let me try and take that. We could certainly use more money for the Guard and the Reserves in communications

equipment. There is just no question about it. It is just a matter of how much money can we put in the budget to address the active forces versus the Reserves and the Guard.

For example, in 1983 we are buying, as I mentioned, some of the VHF multichannel radios and the relays. We are buying the newest type of a ground radar that is used for tracking incoming artillery shells, the TTQ-37 it is called. But when all is said and done, to be honest with you, they still do not have an adequate amount of communications equipment.

Mrs. HOLT. Could they use $40 million for it if we gave it to them?

Mr. LATHAM. Absolutely. Now, one of the things that will happen, as the TRI-TAC equipment comes in, it will first go into the Active Forces and into the forward areas such as the European areas, Korea, places like that. As it replaces older equipment but still usable equipment, that equipment will be put into the Reserves and the Guard. Then we will gradually have to fill that out. It is true not only of communications equipment but in just equipment in general, they need more help.

Mrs. HOLT. Thank you.

Mr. LATHAM. You asked a question on Southeast Asia, maybe I can just show you how the communications work there if you would like, just two viewgraphs because it is a tremendously big area, and the difficulty of communicating there is [deleted].

This shows how we kind of connected up today. What you see here is that in talking to afloat units, talking to the U.S. from Riad and here is the AWACS. We are on satellites called the DSCS and Atlantic satellites. This particular one here, if you notice over here around the Indian Ocean, Discus; and for the Navy we are back to shore on FLTSATCOM.

So, the basic way we start connecting up in this huge geographic area is [deleted]. Now, if we had to go in there to that area with the RDJTF deployment, these are the types of communications, then, that we would use.

First of all, there is this communication activity between the [deleted] to get communications connectivity back to CONUS or back to some other place within the area that you needed to connect up to.

For example, to get over to his Navy support you would probably go through [deleted] and things like that.

This kind of communications equipment is what we are buying within the services themselves, and then as I mentioned, the joint crisis mobile communications equipment that can be deployed by C-130 and would likely go to an RDJTF headquarters forward operating base.

So, that is just sort of a snapshot of that area. It is a big area to communicate over.

Mr. STRATTON. Thank you.

One other question here—you may have answered this in part—do you have plans to use the satellites to provide information to the battlefield commander?

Mr. LATHAM. Yes, sir. In fact, we have today a large number of these portable UHF satellite terminals procured for the forces that

need to deploy in those kinds of areas. In fact, they are about the size of a briefcase.

In addition, we are in high-volume production, if you want to call it that. Actually, there will be many, many tens and tens of SHF terminals for the rapid deployment forces and mobile forces for communications connectivity through the DSCS Satellite. The DOD dependency on communications satellites is growing rather than decreasing, frankly. There is quite a bit of capability today.

To give you some feeling for that, sir, today we have approximately [deleted] in the force—that is all four services. That is expected to grow during the 1980's to approximately [deleted]. Today we have a [deleted].

So, we will be procuring more of these kinds of equipment and frankly, will have more dependency on the [deleted].

Mr. STRATTON. What about [deleted].

Mr. LATHAM. Yes, sir, [deleted].

Now, we are procuring, developing and producing a van that is called [deleted].

So, we are developing that capability to move right with the force, yes, sir.

Mr. STRATTON. Do you have any other questions?

Mr. CHASE. Mr. Latham, we understand that the Army solicited a bid for some vehicular radios, VRC-12's, to be specific, from three companies, and when the bids came in an Iranian company was in fact the low bidder. We have a lot of interest on the Hill. Mr. Wright, our chairman, and Mr. Price are concerned that the award of a vital communications contract to Israel might endanger our supply.

What is your opinion about establishing of a sole supplier for communications equipment in an overseas country?

Mr. LATHAM. First of all, it was an Israeli company, not Iranian.

Mr. CHASE. I am sorry.

Mr. LATHAM. It turns out that that company had been in fact producing about 30 percent of the VRC-12 parts and then shipping them to the States, and "E" Systems who had the contract at that time with their ECI division in Florida was putting the radios together and completing them.

When it came to this competition, there was an open competition, and the Israeli outfit said, "We will take them on," and they came in with the lowest bid, and actually beat out "E" Systems on price by a fairly significant amount of money.

"E" Systems is still trying to produce VRC-12 radios. They are in trouble, they have actually fallen behind. I think they are some 6,000 parts behind down there right now. So, their track record, first of all, is somewhat suspect and the number of radios that we are going to buy from the Israeli outfit is not the end of all ends; there will probably be some additional procurement.

I do not view it as a serious problem at all. In point of fact is that by the time we buy out the few more VRC-12's we will buy, the SINCGARS radios. Will becoming on line in 1985 and that will be the end of that VRC-12 radio anyway. So, I do not look on it with alarm at all that they won the contract. I am not as worried as other people are about it. The company that lost clearly is concerned about the loss of the business, but it was the low bid.

Mr. CHASE. Thank you, Mr. Chairman.

Mr. STRATTON. One other question here, if the Global Positioning System satellite is not procured, what will happen to the IONDS, the integrated operational nuclear detection systems?

Mr. LATHAM. That is a very good question, sir. That shows you the importance of the program in that those two functions being tied together on a satellite are so vital.

I would say that if the Global Positioning System somehow did not occur we would come back in to you for an IONDS satellite [deleted].

One is, the IONDS allows you to actually detect a neclear detonation [deleted].

Now, that has a number of benefits to you. One, it allows you to [deleted].

So, if there was [deleted].

Third, if you ever [deleted].

[Deleted.]

So, it is a very important package. In addition, on the Global Positioning System (SPS) itself, able to provide positive navigation and timing, and so on. That has major benefits that have not usually been discussed in the open.

We are putting Global Positioning System receivers, or will, on some of our [deleted].

So, it is a very important system.

Mr. STRATTON. How does the IONDS pick up a nuclear burst [deleted].

Mr. LATHAM. The way the satellite constellation is deployed, these are [deleted] satellites that eventually would be deployed.

Mr. STRATTON. Oh, not just one.

Mr. LATHAM. Yes, sir. They are in several planes and in several satellites per plane, and as a result on any given point on the Earth you will be able to see with very high probability four satellites at any given time. They are at about 10,000 miles altitude, sir.

Mr. STRATTON. And these are in place now?

Mr. LATHAM. No, sir. We have today [deleted] satellites on orbit, [deleted]. So, we only have [deleted] up there and we will be putting [deleted] constellations up, sir.

Mr. STRATTON. What was it that detected the explosion down around South Africa, was that a regular reconnaissance satellite?

Mr. LATHAM. No, sir. First of all, we are not sure that [deleted]. That is a controversy that is still raging in the scientific world because all you have is this [deleted]. Remember, we put a few of those up several years ago.

Mr. STRATTON. I see. Mr. Klein.

Mr. KLEIN. Thank you, Mr. Chairman.

The GPS program is in for about $1.2 billion. That covers what, the [deleted] satellities and ground stations?

Mr. LATHAM. Let me see, I am not sure what the total number is, but that is about approximately the right number. The satellites themselves, to buy [deleted] satellites—and this is an innovative buy if we go do that—fixed price, block buy $1.3 billion; that buys [deleted]. So, that gives you your first big constellation and a replenishment of satellites for a number of years.

If we buy them incrementally like we normally do business around here, it is up $300 million from that, $1.6 billion. So, the satellites constellation alone is about $1.3 billion.

Mr. KLEIN. We had trouble with the program last year.

Mr. LATHAM. Yes, sir.

Mr. KLEIN. Because of the user equipment cost it was extrapolated to be around $9 billion.

Mr. LATHAM. Well, Let me talk about that a second. First of all, the number of users is controversial. What you have usually seen is someone says, "Well, there will be 20,000 terminals procured," or something. I am not sure how many will be procured.

But to your point, the big money that is usually advertised for GPS is in the terminal segment. It depends on how many we buy. Each of the services are not examining how many of these terminals they do want to procure. So, the number is rubber. I think it will go down rather than up. I do not see it being a $9 billion program at all. In fact, our estimate is that the satellites, the ground terminal, and the number of user terminals we know today that people would be expected to normally buy, it is about a $3 to $4 billion total program—not anything near $8 or $9 billion.

Mr. KLEIN. One other question, Mr. Chairman.

Mr. STRATTON. Go ahead.

Mr. KLEIN. We have JTIDS, Have Quick and Seek Talk. Now, how much overlap is between those three programs? I have heard the theory that really JTIDS would be the better and least-cost program. Have Quick would be available earlier, but the Seek Talk program would be expensive.

Can JTIDS in fact replace or be used instead of procuring Seek Talk?

Mr. LATHAM. Let me take it one at a time. First of all, Have Quick as you mentioned, is a first-cut interim system. We all recognized that when we went ahead with the Have Quick program; it is a UHF/AJ device that provides AJ protection for the voice-only UHF radios. It is extremely cheap, it is like $2,000 a radio to modify an ARC-164. We are buying several thousands of those and the expectation is that that it will [deleted].

Seek Talk is also a UHF antijam communications system. It would be the ultimate replacement for Have Quick in the Air Force. Now, the Air Force has underway—and in fact finished but it has not been briefed all the way to the four-start level—an AJ line-of-sight [LOS], antijam architecture study that involved the Navy and Army, and Marine Corps, as well.

The answer is not in yet as to what the mix should be between Seek Talk and JTIDS. I believe that there is a need for both voice and data for the combat forces.

What we are trying to do is examine what is the most cost-effective mix of those two communications systems. JTIDS does voice and data, Seek Talk does voice only. But we are looking at what the mix is because they are in two different frequency bands and essentially can serve different users as well.

So, the vote is not in yet as to how that is going to come out.

Mr. KLEIN. The money is in the budget.

Mr. LATHAM. Yes, sir.

Mr. KLEIN. We may have a problem with that.

Mr. LATHAM. I understand, and we need to make sure we can articulate to you an AJ LOS communications architecture that makes sense.

Mr. KLEIN. What is the threat toward Seek Talk?

Mr. LATHAM. Well, the expectation is, what the [deleted].

Or, they will [deleted].

So, what you have done [deleted].

Have Quick is [deleted].

So, it is a more sophisticated way to get your jamming resistance. Plus, in the Seek Talk program they have combined that with [deleted].

So, it is a combination [deleted].

Mr. KLEIN. There is a theory that we really do not know how bad off we are, and we do not know how good we are because we have never had any exercises that involved warfare. In other words, we [deleted]. What is the answer to all of this?

Mr. LATHAM. Well, the answer is, [deleted]. So, we do do it.

The same is true in the Air Force and the Army. For example, out at Nellis Air Force Base the Air Force has [deleted]. They have run exercises in which the pilots have [deleted] and the other ones do not, and the ones that do not have it do not communicate, and they prove it.

So, we [deleted]. We would like to [deleted]. But we do do some of that. Not as much as I would like, but I think it is not neglected, let me put it that way.

Mr. STRATTON. Thank you very much, Mr. Latham and General Donahue for your enlightening us on an important subject. We hope to respond accordingly when we markup our bill.

Mr. LATHAM. Thank you, sir.

Mr. STRATTON. The committee will stand adjourned until tomorrow at 10:30 a.m.

[Whereupon, at 4:35 p.m. subcommittee adjourned, to reconvene at 10:30 a.m., Thursday, March 25, 1982.]

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RESERVE COMPONENTS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
PROCUREMENT AND MILITARY
NUCLEAR SYSTEMS SUBCOMMITTEE,
Washington, D.C., Thursday, March 25, 1982.

The subcommittee met, pursuant to notice, at 10:30 a.m., in room 2337, Rayburn House Office Building, Hon. Samuel S. Stratton (chairman of the subcommittee) presiding.

Mr. STRATTON. The subcommittee will come to order.

This morning we are privileged to hear testimony regarding the Reserve components of the Department of Defense which of course consists of the Army, Navy, Marine Corps, and Air Force Reserves as well as the Army and Air National Guard.

The subcommittee of course is well aware of the condition of the Reserve components which, like the Active Forces, have been suffering over the years from equipment shortages and obsolescence, but these shortages and obsolescences are far more marked in the Reserves and the Guard than they have been in the regular forces.

The shortcomings have been documented by the Secretary of Defense in his readiness report to the Congress that was submitted earlier this year.

It would appear that both the Congress and the Department of Defense are faced with a dilemma that has no immediate solution. As evidenced by the mail that I have received, the Guard and the Reserve have a huge shopping list which includes a very substantial number of items.

On the other hand, the committee is still in the dark with respect to what the Department of Defense has done in compliance with the defense authorization bill of last year which directed the services to provide the Department of Defense, as of the 15th of February, and presumably the Department of Defense would then forward to the Congress, the total list of what the individual departments were going to do in terms of either purchasing equipment for the Guard and Reserve for turning over the hand-down equipment which traditionally they have turned over.

Mr. Klein, do we have anything that would give us any further information on exactly what services the Department proposes to provide to the Guard and Reserve for this current calendar year?

Mr. KLEIN. Mr. Stratton, we have been provided an annex to the annual Secretary of Defense's readiness report which is classified confidential. It is in three columns and basically lists various numbers of items of equipment for fiscal 1982, fiscal 1983 and fiscal 1984 they plan to transfer. It is a very itemized and hard to read

list, but it gives us nothing other than what they might plan to transfer over.

Mr. STRATTON. No indication of recognizing and providing for the requirements of the Reserve and Guard?

Mr. KLEIN. No, sir. The report said that it is the policy that the services do not budget separately for the Reserve components, that they do mostly transfer equipment out of the Active Forces.

In the case of the Air Force they actually are putting new A-10's and new F-16's into the Guard.

Mr. STRATTON. Apparently we have not really been able to convey the message we thought we were conveying last year. Perhaps it would be desirable to put into the authorizing bill specific legislation directing them to indicate exactly what they are going to purchase in terms of new equipment for these units. We will have to make it a little bit more specific.

At any rate, those who have the interest of the Reserve and Guard at heart have given us an expensive shopping list of add-ons. These numbers are certainly not all inclusive. We have, for example, 12 C-12 aircraft, 24 A-10 aircraft, 26 F-16 aircraft, 25 F-15 aircraft, 36 C-130's, 62 AH-1S helicopters, $36.7 million for communications equipment, forward looking infrared for the A-7 aircraft, $200 million for JT-3D engines for tankers, addition of the TEREC system to the Air National Guard RF-4 aircraft, and additional KC-130 aircraft for the Marine Corps.

I am sure there are other recommendations. This is the largest budget of course that has ever been submitted by the Department. The accommodation of the Reserve components requests would entail the addition apparently of $3.5 million to $4 million above that budget request.

Given the current mood of Congress, I am afraid that that would represent an impossible task. Members will recall that when President Reagan was finally persuaded by Mr. Stockman and others to make some total cuts in the 1982 defense budget, he agreed to $2 billion in cuts with the implication that $2 billion out of a $200 billion budget would not really create too much of a problem. But it turned out that within that $2 billion were virtually all the items which this subcommittee on its own had added to the bill to take care of the Guard and the Reserve.

So, the mood of Congress which many of us deplore could perhaps jeopardize some of these programs even further.

Having said this, however, I know the committee is sympathetic to the needs to modernize the total force and that means fully and effectively utilizing the Active and Reserve components.

This morning the subcommittee will hear from Maj. Gen. Francis Greenlief, National Guard (retired), who is the executive vice president of the National Guard Association.

He will be followed by Capt. Curtin R. Coleman, U.S. Naval Reserve, who is president of the Naval Reserve Association.

Captain Coleman will be followed by Maj. Gen. J. Milnor Roberts, U.S. Army (retired), who is the executive director of the Reserve Officers Association of the United States.

Because of some other commitments relating to the procedures between the House Armed Services Committee and the Defense Appropriations Subcommittee, the chairman will have to leave at

11:15, but the distinguished gentleman from Florida, the very senior member of the committee, is available to take over the chair. I know the interests of the Guard and the Reserve will not be lost sight of by the distinguished gentlemen from Florida.

General Greenlief, with that long and probably unnecessary introduction you may proceed.

STATEMENT OF MAJ. GEN. FRANCIS S. GREENLIEF, NGUS (RETIRED), EXECUTIVE VICE PRESIDENT, NATIONAL GUARD ASSOCIATION OF THE UNITED STATES

General GREENLIEF. Mr. Chairman, it may be you said it all and my testimony is unnecessary. However, with your permission I will submit my full statement for the record and present just a summary.

Mr. STRATTON. Without objection that will be included.

General GREENLIEF. Mr. Chairman, and members, in past years the defense budget request did not address equipment shortages in the Guard and Reserve and it was therefore left to organizations such as ours to point out the equipment deficiencies in the Guard and Reserve. The language of the fiscal year 1982 DOD authorization bill which requires of DOD an annual report on National Guard and Reserve components equipment was in my view one of the most important legislative acts pertaining to the Guard and Reserves for many years.

Although we have not read that report, I am quite confident that it shows no new procurement of equipment for the Guard and Reserve in fiscal year 1983. But based on our knowledge of the total equipment authorized for the Army National Guard and the deployable assets now on hand we estimate the major items equipment shortage of the Army National Guard at $3.7 billion.

The table at page 4 of my statement is a table which displays our calculation of shortages and their cost in 1981 dollars.

Army Guard units have on hand only 78 percent of their training requirement for equipment and, more importantly, only 69 percent of their wartime requirement for equipment. Attached to my full statement are factsheets explaining the need for each item of equipment listed in the table. However, I do want to state just three items as demonstrations of the seriousness of the need.

ATTACK HELICOPTERS

If the Army's planned procurement of AH-64's is built and delivered as planned and if all of the AH-1G's in the Army's inventory are converted to AH-1's the Army Guard will be short 286 attack helicopters at the end of the AH-64 production. The Army Guard attack helicopter units cannot fight in Europe with the UH-1C, M and B models with which they are equipped and will still be equipped in 1990.

We urge this committee to authorize the procurement of 62 AH-1 attack helicopters for the Army Guard in fiscal year 1983.

TRUCKS AND TRAILERS

Army Guard units are short 4,218 trucks of all types. These same units are short 10,198 trailers of all types. Now the shortage of

trucks and trailers may not appear to be as critical as shortages of aircraft, tanks, and other exotic weapon systems, but without trucks and trailers to move soldiers, ammunition, fuel, artillery, maintenance support, and communications, units cannot fight or function.

AIR DEFENSE WEAPONS

Air defense battalions of the eight Army National Guard combat divisions are without usable weapons. We believe the problem could be solved by buying product improved Vulcans, or PIVAD's, and Chaparrals for the Army Guard.

In addition, we would recommend 16 forward area alerting radar (FAAR) sets be authorized and funded in fiscal year 1983. The Army Guard could then begin training with effective air defense weapons in 1983 or 1984.

Mr. Chairman, and members, there may be a better way of providing air defense for the eight Army National Guard combat divisions than the one outlined in my statement. If there is, we will accept it. But as of today there is no other air defense weapons system even programed for those eight Guard divisions or, to our knowledge, even proposed.

AIR NATIONAL GUARD

In our view full modernization and expansion of Air Guard units offers the most cost effective way of increasing the conventional war combat capability of the U.S. Air Force.

A table at pages 7 and 8 of my statement displays our estimate of the requirements to fully equip and modernize the Air National Guard. That is a long list of requirements and I have attached fact-sheets to my statement on each of the items listed. Therefore I will only address a few of the most critical shortages.

COMMUNICATIONS

Of most immediate concern is the $7.88 million shortage of equipment in units already designated as part of the Rapid Deployment Force. In addition, equipment estimated to cost $28.8 million is needed to permit Air Guard communication units to modernize with the TRI-TAC communication system and equipment along with the Active Air Force.

TACTICAL FIGHTERS

At the end of fiscal year 1983 the Air National Guard will still have one tactical squadron equipped with O-2A aircraft and three squadrons equipped with the OA-37B. These aircraft can make only a marginal at best contribution to air war in Europe and should be equipped with modern aircraft.

Of the 5 A-10A squadrons of the Air Guard, 1 is equipped with 24 aircraft, as are the CONUS-based U.S. Air Force squadrons, but the remaining squadrons have only 18 aircraft each. Even with the delivery of the 10 A-10's included in fiscal year 1983 air procurement program the four air squadrons will remain with only 28 aircraft. Studies show that increasing the aircraft authorization of

these Air Guard squadrons from 18 to 24 would produce an increase in combat capability of 33⅓ percent while the support cost would increase only 8 percent.

AIR DEFENSE

The venerable F-106 fighter interceptor is long overdue for replacement. We applaud the Air Force decision to start replacing Active Air Force fighter interceptors with F-15's.

We do not understand the apparent Air Force decision to equip Air Guard air defense squadrons with the F-16 which is not currently air defense capable. If the F-16 is equipped with AAMRAM and appropriate radars, we will of course accept the F-16 as a fighter interceptor, but we insist that the Air National Guard air defense fighter interceptor units should be modernized concurrently with Regular Air Force air defense fighter interceptor units.

TACTICAL AIRLIFT

The Air Guard and Air Force Reserve provide 64 percent of the tactical airlift assets of the Air Force, but this force has not been modernized and the full capability of these units is not being utilized. We strongly urge the authorization and funding of 36 additional C-130H's for the Air Force to permit 36 C-131E's to be issued to the Air Guard and the Air Force Reserve. This action would permit the modernization of two Air National Guard squadrons and two Air Force Reserve squadrons.

KC-135 REENGINING

NGAUS fully supports the reengining program and urges congressional support of that Air Force program. Congressional action in fiscal year 1982 added $85 million for an alternate version of the KC-135 reengining, the JT3D.

Because of the congressional action, three Air Guard KC-135 squadrons will be reengined in fiscal year 1982. We urge the Congress to continue this program so as to permit the reengining of six additional Air Guard KC-135 squadrons.

FORWARD LOOKING INFRARED RADAR

Air National Guard tactical fighter squadrons have been tasked to perform the night attack mission. However, the aircraft have not been equipped with the FLIR which is necessary for the tactical fighter night attack mission. Two Air Guard A-7 squadrons are included in the RDF and we urge the authorization and funding of 24 FLIR systems for these RDF units.

For the Army National Guard we recommend that authority and funding be provided for Army National Guard ground equipment at an estimated cost of $777 million and for Army Air Guard aviation equipment at an estimated cost of $324 million. The total estimated cost of that recommendation is $1.18 billion and the details are at tab A of my statement.

For the Air Guard we recommend that authority and funding be provided for the procurement of Air Guard communications equipment at an estimated cost of $36.7 million, for procurement of air-

craft at an estimated cost of $2 billion and aircraft modifications at an estimated cost of $345.7 million. The estimated cost of that recommendation is $2.36 billion and the details are at tab A.

In summary, Mr. Chairman, and members, we are deeply appreciative of the support this subcommittee has always provided to the National Guard and we pledge to you to produce the maximum combat readiness for the resources provided.

WRITTEN STATEMENT OF MAJ. GEN. FRANCIS S. GREENLIEF

Mr. Chairman, and members of the subcommittee, I am appreciative of the opportunity to present the views of the National Guard Association of the United States on the all-important subject of the equipment needs of the National Guard.

The Army consists of the Regular Army, the Army National Guard of the United States and the Army Reserve. The Air Force consists of the Regular Air Force, the Air National Guard of the United States and the Air Force Reserve.

The Army National Guard provides the following percentages of the Army's combat capability:

29% of the total Army personnel strength.

33% of the combat divisions.

73% of the separate brigades.

57% of the infantry battalions.

41% of the mechanized infantry battalions.

43% of the armored battalions.

57% of the armored cavalry regiments.

51% of the field artillery battalions.

30% of the aviation units, and equally higher percentages of other combat organizations of the Army.

The Air National Guard provides the following percentages of aircraft by mission areas:

27% of the total Air Force.

42% of electronic warfare aircraft.

66% of air defense interceptors.

57% of tactical reconnaissance aircraft.

38% of tactical support aircraft.

30% of tactical airlift aircraft.

27% of tactical fighter aircraft.

17% of strategic tanker aircraft, and

15% of rescue and recovery aircraft.

Considering the high percentage of Army and Air Force combat capability which is provided by the National Guard, it is not possible to assess the

readiness of the Army and Air Force without assessing the readiness of the National Guard. When the subject of readiness is discussed, the discussion normally centers on organizational clothing and equipment, spare parts, petroleum oil and lubricants (POL), ammunition, maintenance capability, training support and combat support. Generally speaking, a discussion of readiness is taken to mean consideration of those things needed by soldiers and airmen operating their equipment in training or combat. However, when one considers the antiquity of much of the National Guard's equipment and absolute voids of some items of equipment, any discussion of National Guard readiness must address the equipment problem.

With the adoption of the Total Force Policy in FY 1971, major elements of the active Army and Air Force were inactivated and their roles and missions were passed to the National Guard and Reserves. Guard and Reserve leadership applauded the establishment of the Total Force Policy because we were promised combat standard equipment with which to carry out the new roles and missions.

As stated in Secretary of Defense Laird's memorandum of August 1970, the purpose of increased reliance on the Guard and Reserves was to reduce defense expenditures, and significant savings were achieved. However, in our view, what has occurred is a classic case of double dipping.

Having reduced defense expenditures by eliminating active duty force structure, a series of Administrations have sought to further decrease defense expenditures by failing to ask the Congress for authority and funds to fully equip Guard and Reserve units to perform the roles and missions assigned them in war plans.

The equipment required by a unit is the same whether the unit be an active duty unit or a Guard or Reserve unit. The equipment requirement is generated by the fact that a unit is required by war plans — not by the component which furnishes the unit.

ANNUAL REPORT ON NATIONAL GUARD AND RESERVE COMPONENT EQUIPMENT

In past years, the Department of Defense budget requests did not address equipment shortages in the Guard and Reserves. It was, therefore, left to organizations such as ours to point out the equipment deficiencies of the Guard and Reserves.

The language of the FY 1982 DoD Authorization Bill which requires of DoD an Annual Report on National Guard and Reserve Component Equipment was

one of the most important legislative acts pertaining to the Guard and Reserve for many years. Although we have not read that report, I am quite confident that it shows no new procurement of equipment for the Guard and Reserve in FY 1983. Based on procurement that has been requested for the Army and the Air Force, the out years of that report must show some gains for the Guard and Reserves, but I am not competent to comment.

ARNG

Based on our knowledge of the total of equipment authorized for the ARNG and the deployable assets on hand, we estimate the major items equipment shortage of the ARNG at $3.7 billion. The following table displays our calculation of shortages and costs in 1981 dollars:

ITEM	No. SHORT	COST (Millions)
Aircraft	933	$740
Tactical Automatic Data Processing Equipment	802	135
Tanks	694	657
Trucks	3,722	211
Artillery	310	102
Radars	433	29
Air Defense		
Chaparral/Vulcan	384	298
Stinger	9,600	50
Carriers	9,611	345
Communications		537
Other (Engineer equipment, Medical equipment, Trailers, Generators, Shop sets, etc.)		569
	TOTAL	$3.7 billion

ARNG units have on hand only 78% of their training requirement for equipment and only 69% of their wartime requirement for equipment. Attached to my statement are fact sheets explaining the need for each item of equipment listed above. However, I do want to cite three items as demonstrations of the seriousness of the need.

Attack Helicopters

Attack helicopter units of the ARNG are authorized 369 helicopters. Considering the 39 AH-1S attack helicopters that the Congress has added to procurement specifically for the ARNG and older AH-1S's being provided by the Army, the ARNG will have only 83 AH-1S's on hand at end FY 1984. If the Army's planned procurement of AH-64's is built and delivered as planned and if all of the AH-1G models in the Army inventory are converted to AH-1S's, the ARNG will still be short 286 attack helicopters at the end of the AH-64 production. The ARNG attack helicopter units cannot fight in Europe with the UH-1 C, M, B models with which they are now equipped and will still be equipped in 1990. We urge this

committee to authorize the procurement of 62 AH-1S attack helicopters for the ARNG in FY83. If in FY 1984, AH-64 procurement can be expanded to include the Guard's requirement, it should be expanded. If not, AH-1S production should be continued until the Guard's requirement is met.

Trucks and Trailers

Force Activity Designator (FAD) III units are the ARNG's earliest deploying units; FAD IV and V units are later deploying units. These units are short 4,218 trucks of all types. These same units are short 10,198 trailers of all types. The shortage of trucks and trailers may not appear to be as critical as shortages of aircraft, tanks and other exotic weapons systems, but without trucks and trailers to move soldiers, ammunition, fuel, artillery, maintenance support and communications, units cannot fight or function.

Air Defense Weapons

The air defense battalions of the eight ARNG combat divisions are without usable weapons. The eight air defense battalions are equipped with Korean War vintage M-42 Dusters which were dropped from the active Army's inventory in the early 1960's. The light tank chassis on which the twin 40mm guns are mounted are almost impossible to maintain because of the lack of parts. The high explosive ammunition is not safe to fire. In short, the eight ARNG combat divisions cannot protect themselves against air attack.

All active Army divisions are equipped with Vulcan/Chaparral air defense weapons. The Army is not satisfied with the Vulcan gun and has developed a new Division Air Defense System — DIVAD — for its heavy divisions and is developing the Light Air Defense System — LADS — for its light divisions. There is no program to procure these gun systems for ARNG divisions.

We believe the problem could be solved by buying product improved Vulcans (PIVAD) and Chaparrals for the ARNG.

We recommend that the Army issue 16 of the 32 Chaparral sets being produced as a maintenance float for the Army to the eight ARNG air defense battalions and that the Congress authorize and fund in FY 1983 Chaparral Test Sets to accompany the Chaparral fire units which could be provided to the ARNG in FY 1984. In addition, we recommend 16 forward area alerting radar (FAAR) sets be authorized and funded in FY 1983. The ARNG could then begin training with effective air defense weapons in 1983 or 1984. We would then ask the Congress to authorize and fund 48 Chaparral fire units in FY 1984, 1985, 1986, and 1987.

There may be a better way of providing air defense for the eight ARNG combat divisions. If so, we will accept it. But as of today, there is no other system programmed or to our knowledge even proposed.

AIR NATIONAL GUARD

The Air National Guard is the best equipped of all of the Reserve Components, but even in the ANG serious shortages exist. In our view, full modernization and expansion of ANG units offers the most cost effective way of increasing the conventional war combat capability of the United States Air Force.

The following table displays our estimate of the requirements to fully equip and modernize the Air National Guard:

AIR NATIONAL GUARD SHORTAGES

Aircraft Modernization Requirements, FY83-FY89, by Weapon System

(Cost in FY82 Dollars--Estimated)

F-15 Interceptors-convert five F-106's and five F-4's by FY89	$ 3.68 billion
F-16 Tactical Fighter-convert four units (24 PAA)	1.08 billion
A-10 Tactical Fighter-convert two units	.43 billion
-increase PAA of all units to 24 PAA	.20 billion
C-130 Tactical Airlift-convert five	.54 billion
C-130A units by FY86	
-increase four units to 16 PAA	.37 billion
HH-X Rescue & Recovery-convert HH-3's to HH+X	.10 billion
KC-135 Reengining--Reengine ANG KC-135 fleet	2.30 billion
TOTAL	$ 8.70 billion

Support Equipment Shortages for Wartime Deployment

(Cost in FY82 Dollars--Estimated)

Missile Equipment	$ 1.7 million
General Acft Support	1.49 million
Munitions Handling	7.02 million
F-4 Support Equipment	3.82 million
A-10 Support Equipment	.43 million
A-7 Pave Penny	.53 million
(Passive Laser System)	
Chemical Warfare and Cold Weather	11.50 million
TOTAL	$26.49 million

Vehicle Shortages for Wartime Deployment

(Cost in FY82 Dollars--Estimated)

Nine Different Types of Vehicles -- 995 short	$17.52 million

Medical Equipment Requirement

(Cost in FY82 Dollars--Estimated)

Medical and Dental X-Ray Equipment, X-Ray Processors, Optometry and Dental Equipment	$ 7.95 million

C-E&M Requirements FY83-87

(Cost in FY82 Dollars--Estimated)

15 TRC-97A Radios, 2 SB-3614 Switchboards, 3 TSC-62 Tech Controls and Other Equipment	$169.8 million

That is a long list of requirements and I have attached fact sheets on each of the items. Therefore, I will only address a few of the most critical shortages.

Communications

ANG communications units provide 70% of the total Air Force combat communications capability, but those units are either short of equipment or equipped with antiquated equipment to the degree that the cost to modernize in the time period FY 1983 to 1987 is estimated to be $169.8 million. Of most immediate concern is the $7.88 million shortage of equipment in units already designated as part of the Rapid Deployment Force. In addition, equipment estimated to cost $28.8 million is needed to permit ANG communications units to modernize with Tri-Service Tactical (TRI-TAC) Communications equipment along with the active Air Force.

Tactical Fighters

At end FY 1983, the ANG will still have one tactical squadron equipped with O-2A aircraft and three squadrons equipped with the OA37-B. These aircraft can make a marginal at best contribution to air war in Europe and should be equipped with modern aircraft.

Of the five ANG A-10A squadrons, one is equipped with 24 aircraft as are CONUS based Air Force squadrons. The remaining squadrons have only 18 aircraft each. Even with the delivery of the 20 A-10's included in the FY 1982 Air Force procurement program, the four ANG squadrons will remain with only 18 aircraft. We see no reason why A-10 production should be stopped short of filling the Air Guard requirement. Studies show that increasing the aircraft authorization of the squadrons from 18 to 24 would produce an increase in combat capability of 33-1/3%, while support costs would increase only eight percent. At a time when there is such great concern about defense expenditures, we should be seeking the least expensive methods of improving combat capability and this is surely the way.

Air Defense

The venerable F-106 fighter interceptor is overdue for replacement. Studies have shown that beginning in FY 1984, the weapons system will no longer be supportable for lack of parts. Then cannibalization must begin. We applaud

the Air Force decision to start replacing active Air Force fighter interceptors with F-15's. We do not understand the apparent Air Force decision to equip ANG air defense squadrons with the F-16 which is not currently air defense capable, and we do not understand why modernization of the ANG units should be delayed until some distant date.

If the F-16 is equipped with AAMRAM and appropriate radars, we will, of course, accept the F-16 as a fighter interceptor, but we insist that ANG air defense interceptor units should be modernized concurrently with regular Air Force air defense interceptor units.

Tactical Airlift

The ANG and the Air Force Reserve provide 64% of tactical airlift assets of the Air Force, but this force has not been modernized and the full capability of these units is not being utilized.

Five ANG tactical airlift squadrons are still equipped with C-130A aircraft and one squadron is equipped with C-130D's. (The D model is the C-130A equipped with skis for special missions.) Our fact sheet provides detailed information which, in our view, justifies continued procurement of C-130H's. Our position is buttressed by Air Force testimony which justifies a need for increased intratheater aircraft.

We strongly urge the authorization and funding of 36 additional C-130H's for the Air Force to permit 36 C-130E's to be issued to the ANG and AFRES. This action would permit the modernization of two ANG squadrons and two AFRES squadrons.

USAF C-130 squadrons are authorized 16 aircraft each. ANG squadrons are authorized only eight aircraft each. ANG squadrons have the capability to increase from eight aircraft to 16. ANG squadrons could increase their combat lift capability 100% with only a minimal increase in support costs. This cost effective increase in combat capability should be made possible by continued procurement of C-130H's beyond FY 1983.

KC-135 Reengining

The NGAUS fully supports the CFM-56 reengining program and urges congressional support of the Air Force program. Congressional action in FY82 added $85 million for an alternate version of KC-135 reengining -- the JT3-D. Because of the congressional action, three ANG KC-135 squadrons will be reengined in FY 1982. We urge the Congress to continue this program so as to permit the reengining of six additional ANG KC-135 squadrons.

Forward Looking Infrared Radar (FLIR)

ANG A-7 tactical fighter squadrons have been tasked to perform the night attack mission. However, the aircraft have not been equipped with the FLIR which is necessary for tactical fighter night attack. This is an Air Force approved modification, but because of budget limitations is not included in the procurement program.

Two ANG A-7 squadrons are included in the RDF and we urge the authoriztion and funding of 24 FLIR systems for these RDF units.

RECOMMENDATIONS

ARNG

We recommend that authority and funding be provided for ARNG ground equipment at an estimated cost of $777 million and for ARNG aviation equipment at an estimated cost of $342 million. Total estimated cost of recommendation is $1.18 billion. Details of this recommendation are at Tab A.

ANG

We recommend that authority and funding be provided for procurement of ANG communications equipment at an estimated cost of $36.7 million, for procurement of aircraft at an estimated cost of $2 billion, and aircraft modifications at an estimated cost of $345.7 million. Total estimated cost of this recommendation is $2.36 billion. Details of this recommendation are at Tab B.

SUMMARY

Mr. Chairman and members, we understand that our recommendations may appear to be ambitious. But other than information you may have received in the congressionally-directed "Annual Report on National Guard and Reserve Component Equipment," we know of no other firm request for equipment for the National Guard, and we are ambitious to improve the combat readiness of the Army and Air National Guard.

Mr. Chairman, we are deeply appreciative of the support this subcommittee has always provided to the National Guard, and we pledge to produce the maximum combat readiness for the resources provided.

READINESS REQUIRES
ADDITIONAL EQUIPMENT PROCUREMENT
FOR THE NATIONAL GUARD

THE NATIONAL GUARD IS SHORT $12.4 BILLION IN PROCUREMENT ITEMS TO MEET ITS WARTIME EQUIPMENT REQUIREMENT

IT IS INCUMBENT UPON THE UNITED STATES TO "PROVIDE AND MAINTAIN COMBAT-STANDARD EQUIPMENT FOR GUARD AND RESERVE UNITS IN THE NECESSARY QUANTITIES AND PROVIDE NECESSARY CONTROLS TO IDENTIFY RESOURCES."

From the 1970 Total Force Memorandum
By Melvin R. Laird, Sec. of Defense

"THIS HAS NOT BEEN THE CASE...THE POLICY APPEARS TO BOIL DOWN TO A REDISTRIBUTION OF LESS OBSOLETE EQUIPMENT AND WEAPONS SYSTEMS TO THE NATIONAL GUARD AS TRULY NEW SYSTEMS ENTER THE ACTIVE ARMY/AIR FORCE INVENTORY."

From the 1981-82 NGAUS Position Statement

NATIONAL GUARD ASSOCIATION OF THE UNITED STATES

One Massachusetts Avenue, N.W. -- Washington, D.C. 20001
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EQUIPMENT OUTLOOK 1982:

SHORTAGES STILL PLAGUE NATIONAL GUARD

As we advance into the second decade of the Total Force Policy, we can see substantial movement in the direction originally intended by its framers in 1970. There is an increased reliance on the National Guard and Reserve as elements of the Total Force. They are the initial and primary source of augmentation of the active forces. They do compose about one-half of the nation's combat power and two-thirds of its support capability. And Guard forces do represent anywhere from 40 to 50 percent of the Army and Air Force warfighting capability in the initial stages of a mobilization.

What has not moved in the direction originally proposed by the Total Force Policy framers, however, is their guidance that the United States should "provide and maintain combat-standard equipment for Guard and Reserve units in the necessary quantities..." In other words, the increased reliance on the National Guard has produced only limited increases in equipment. There is little, if any, direct procurement for the National Guard in Army and Air Force procurement plans, although an amendment to the 1982 DoD Authorization Act does now require an annual report from the Secretary of Defense to the Congress on the status of Guard and Reserve equipment. Perhaps the severity of the situation is best stated in an excerpt from a private study printed in the 1981-1982 NGAUS Position Statement. That statement contends that what is needed by the National Guard "above all is modern equipment rather than hand-me downs, and equipment they can keep regardless of any sudden need to resupply an ally."

What this means in blunt language is that a large part of the United States military establishment is ill-equipped to enter any future conflict. The types and quantities of equipment which can be made available to the Guard (and Reserve) will determine their ability to fulfill their wartime missions. Most military experts predict that any equipment ordered after the beginning of a war will be delivered after it is over. Without equipment, the National Guard cannot be ready.

* * *

As the 97th Congress in its 2d Session addresses the defense budget for fiscal year 1983 and beyond, the Administration's proposal to redress the erosion of the U.S. defense base, to include its weapons systems, is confronted

with congressional concern over the size of budget deficits.

Operating on the supposition that defense cuts are inevitable, members of the Congress are seeking counsel from the Defense Department and the Services on where to cut spending. While declining to identify any low priority items, defense officials are placing priority emphasis on what are termed "readiness items" in the active forces. Readiness items, for the most part, are defined as those things needed by soldiers or airmen to operate their equipment systems in training or in combat, such as ammunition, parts, petroleum oil and lubricants and training and combat support items. Defense officials are warning the Congress that cuts may also affect these readiness items, however, as the big ticket items are estimated to achieve only about $5 billion in savings in FY83 outlays.

In the National Guard, many units operate without the necessary equipment to perform their mission or with inadequate and antiquated equipment items. Thus, the definition of readiness items is very different in the National Guard. This is not to say that the Guard does not need the typical readiness items to support what weapons it has; it does. What it does mean is that when we do not have the weapons systems first, "readiness items" become a second priority and equipment procurement becomes our primary readiness concern.

For instance, Air National Guard units equipped with the A-7 aircraft were recently tasked to perform night attack missions, missions which cannot be performed efficiently without FLIR (Forward Looking Infrared Radar) pods. By the same token, units flying RF-4 aircraft without the Tactical Electronic Reconnaissance System are crippled in advance of a mission in high intensity warfare. The list of equipment voids in both the Army and Air National Guard is long, but what they point out is that any discussion of National Guard readiness must focus on equipment.

Major General Edward R. Fry (Ret.), NGAUS President, announced his concern over these equipment shortages and their impact on Guard readiness shortly after NGAUS pegged equipping the Guard as its number one priority last year. He said that the United States has a "long-standing policy of what is, at best, benign neglect in equipping U.S. forces." In an NGAUS policy statement on the same subject, he outlined a goal plan for remedying what he deemed a severe equipment shortage in the National Guard. It included the following:

- Modernization of on-hand equipment to ensure that while it is sufficient for training it is also deployable and compatible with the equipment in the hands of the active forces.

- Identification of sources of modern equipment (i.e., the current "family" of the equipment item) to be made available immediately to mobilized National Guard forces, bringing them to 100 percent wartime equipment levels.

- Over a period of five years, make the transition from "come-as-you-are" to "ready...now"!

Since the Association's designation of equipment as its number one priority, some progress has been made in remedying the shortage. But as the Deputy Assistant Secretary of Defense for Reserve Affairs, Dr. Edward J. Philbin, pointed out in congressional testimony late last year, the Guard and Reserve are still short an estimated $17 billion in equipment items.

WHERE THE NATIONAL GUARD STANDS

As Dr. Philbin pointed out, the National Guard is lacking billions of dollars of equipment needed to fulfill its wartime mission. Although the 1st Session of the 97th Congress produced a real boost to Guard readiness with equipment add-ons, the call for defense cuts in the 2d Session will make further add-ons harder to come by. Coupled with the danger that congressional members may equate what are deemed essential readiness items by the actives to the equipment items essential for readiness in the National Guard, we are faced with a very real need to make our story heard loud and clear in the 2d Session.

Until these shortages <u>are</u> addressed, the National Guard is not ready. The Army National Guard is lacking $3.7 billion of the wartime equipment requirement. It also lacks $83 million needed to fund vital repair part/stock shortfalls. Currently, on-hand assets meet 78 percent of the peacetime authorization and 69 percent of the wartime requirement. It is significant that even of the equipment items on hand, many are not deployable, and for many older, deployable systems, the actives are in short supply of parts. Specific Army Guard equipment shortages are addressed in the fact sheets in this report.

The Air National Guard would need another $26.5 million to bring its support equipment up to wartime requirement levels. The communications equipment shortfall for Air Guard units committed to the Rapid Deployment Force remains significant, as does the shortage of vehicles and the shortage of medical equipment. Again, many of the aircraft in the Air Guard are not con-

sidered survivable in a NATO environment and some communications equipment will not interface with the active forces or our allies.

A "blueprint" for solving these severe equipment shortages can be found in the fact sheets of this report. But without the support of the Administration, the Congress and the nation, the blueprint will not be addressed.

The National Guard Association of the United States, long dedicated to enhanced national security for the nation, has stated that "how this equipment problem is approached over the next decade will have a profound impact upon the ability of the Guard and Reserve forces to be prepared to carry out the missions which have been prescribed." In other words, the Guard and Reserve must be fully equipped to insure our nation's strong national defense.

In short, readiness items for the National Guard are not just those things needed by airmen and soldiers to support their equipment systems. What is needed far more desperately in the National Guard are those equipment systems.

ARNG PRIORITY PROCUREMENT, FY83
(All figures in thousands)

Ground Equipment	
FAD (Force Activity Designator) III (list attached)	$ 132,799
FAD IV and V (list attached)	644,391
Total Ground Equipment	777,190
Aviation Equipment	
AH-1S attack helicopters (62) (list attached)	284,146
C-12 admin aircraft (12) (list attached)	23,000
Aircraft support systems (list attached)	34,378
Total Aviation Equipment	341,524
Total Ground and Aviation Equipment	$1,118,714

SURFACE EQUIPMENT ($000)

FAD III

ITEM	NUMBER	COST
8" HOWITZER	27	$14,309
ARTY SIGHTING SYSTEM	7	28
TRANSPONDER TEST SET	50	911
CARRIERS	293	23,940
TRUCKS (ALL TYPES)	354	15,795
TRAILERS (ALL TYPES)	3,859	38,217
COMMO EQUIP	2,194	1,608
OTHER (ENGR, QM, MED)	6,529	37,991
SUBTOTAL FAD III	13,313	$132,799

SURFACE EQUIPMENT ($000)

FAD IV & V

ITEM	NUMBER	COST
TACTICAL ADPE	58	$35,935
8" HOWITZER	18	9,539
ARTY SIGHTING SYSTEM	312	1,248
ADA BN FAAR RADARS	16	25,000
CHAPPARAL TEST EQUIPMENT	--	6,000
CARRIERS	2,853	228,745
TRUCKS (ALL TYPES)	3,864	119,5 J
TRAILERS (ALL TYPES)	6,339	15,826
COMMO EQUIP	5,894	9,427
OTHER (ENGR, OM, MED)	29,245	193,160
SUBTOTAL FAD IV & V	48,679	$644,391
GRAND TOTAL SURFACE		$77,190

AIRCRAFT ($000)

ITEM	NUMBER	COST
AH-1S	67	$284,146
C-12	12	23,000
AIRCRAFT SPT SYSTEMS	--	34,378
TOTAL		$ 341,524

NGAUS
LEGISLATIVE
FACT SHEET 1982

ATTACK HELICOPTERS

1. GENERAL

- Today's Army standard first-line attack helicopter is the AH-1S Cobra. Although production of an advanced attack helicopter, the AH-64, is programmed, it has not begun. When the AH-64 is produced, the Army will continue to field both the AH-64 and the AH-1S in a high-low mix which will consist of 1,072 AH-1S's and 536 AH-64's.

- Most of the helicoptars in the ARNG are obsolete, non-deployable, Vietnam war gunships without an effective anti-armor capability.

- If it were not for the production of AH-1S's for the Army National Guard over the past two years, manufacture of that weapons system would have stopped. Throughout that period, there was no other active production of attack helicopters. Without a warm production base, industry cannot rapidly produce modern weapons systems needed to meet emergency requirements. It could take up to two years to establish an AH-1S production line from a cold base.

2. SPECIFICS

- The Army Acquisition Objective (AAO) of 1,072 AH-1S's includes 369 for the ARNG.

- Twenty-seven new AH-1S's have been congressionally funded for the ARNG in FY80 and FY81.

- Twelve additional AH-1S's have been congressionally funded for the ARNG in FY82.

- Some older AH-1S's, from the active Army inventory, are being provided to the ARNG.

- There are about 86 AH-1G models which do not have an anti-armor capability but which could be converted to AH-1S configuration.

- By end FY84, the ARNG should have 83 AH-1S's on hand, or 22.5% of the 369 AAO requirement.

- Congress recently cut back the planned production of AH-64's from the programmed 536 to 446.

- The Army study of "Division 86," when adopted, will increase the ARNG attack helicopter requirement by about 100 more attack helicopters.

- The Army does not plan to place any AH-64's in the ARNG inventory.

- If the AH-1S production line closes, and the AH-64 program is cut, the AH-1S AAO plus "Division 86" add-on for attack helicopters in the ARNG will never be achieved.

3. NGAUS RECOMMENDATION

- That the Congress be urged to authorize the funding of 286 attack helicopters for the ARNG with AH-1S's from new production, conversion of AH-1G's, or new procurement of AH-64's, in order to fill the current AAO of 369.

- That the Congress be urged, as a first step in that procurement, to fund an add-on of 62 AH-1S's for the ARNG in FY83, at a cost of $284.15 million ($4.58M per unit) plus $63.9 million for concurrent spares and ground support equipment, for a total of $348.05 (all costs computed from data provided by manufacturer, and do not reflect refined Army cost figures arrived at when contract is let).

- That Congress be urged to require the Department of the Army to develop a plan to provide AH-64's to the ARNG in the future, to ensure that Guard attack helicopter units are fully as capable as like-type active Army units for anti-armor combat operations.

ARMY NATIONAL GUARD AIR DEFENSE ARTILLERY

1. GENERAL

- The ARNG organization includes eight divisions. Each division includes an air defense artillery battalion whose purpose is to provide an anti-aircraft defense against low flying aircraft in the division area.

- All active Army division air defense artillery battalions are currently equipped with Vulcan/Chaparral systems. The Vulcan is a 20mm air defense gun which has never been regarded by using active Army units as an acceptable deterrent against low flying aircraft, because of tracking errors inherent in the system and the inability of the 20mm round to ensure destruction upon hitting the target. The Chaparral system employs an improved missile system which the Army will continue to employ through the 1990's.

- A Product Improved Vulcan Air Defense System (PIVADS), which would substantially improve Vulcan accuracy and provide some improvement in range, has been considered by the Army, but no action has been taken.

- The Army will replace the Vulcan with the newly developed DIVAD (Division Air Defense System) 40mm gun system (for heavy divisions) and the LADS (Light Air Defense System), which is in development. There is no program to purchase these gun systems for ARNG air defense battalions. Vulcans may then fall out of the Army system to the ARNG.

- The ARNG air defense battalions are equipped with Korean War vintage M-42 "Dusters", which are 30 years old and were dropped from the active Army system in the 1960's. "Dusters" are reaching the end of their service life and, even if deployed in a combat area, would soon become unusable because of lack of spare parts and ammunition. At present, there are no programs to replace the ARNG "Dusters."

2. SPECIFICS

- The active Army will have 32 Chaparral systems in its maintenance float in mid-1983.

- The Chaparral weapons system which is currently available could provide ARNG air defense battalions with a genuine anti-aircraft operational system.

- There is no current Army program to place Chaparral weapons systems in the ARNG.

3. NGAUS ALTERNATIVES

- That Chaparral missile systems be provided to ARNG air defense battalions.

- That funds be provided to convert Vulcans to PIVADS prior to issue to ARNG air defense battalions.

- That the Army be directed, alternatively, to provide some other deployable air defense system for ARNG air defense battalions.

4. NGAUS RECOMMENDATION

- That 16 of the 32 Chaparral systems going to the active Army maintenance float be issued, two per battalion to the eight ARNG battalions in 1983, and that $6 million be added to the FY83 Defense Budget to provide Chaparral test equipment to support issue of those systems.

- That 16 forward area alerting radar (FAAR) systems be purchased for the eight ARNG air defense battalions as an add-on to the FY83 Defense Budget at a cost of $25 million (dollar values provided by manufacturers. May change before contract is let by Department of the Army).

- That in the years FY84 through FY87, the following systems be purchased, at prices shown, to completely equip the eight air defense battalions with Chaparral missile anti-aircraft systems and accompanying FAAR radars:

	FY84	FY85	FY86	FY87
Chaparral Fire Units	48	48	48	48*
1983 $	175M	175M	175M	175M
FAAR Radars	16	16	16	
1983 $	25M	25M	25M	

* To include 16 fire units to be returned to the active Army maintenance float in FY87 (All dollar values provided by manufacturers. May change before contract is let by Department of the Army).

- Alternatively, that the Congress be urged to direct the Department of the Army to modify Vulcan gun systems going out of the active Army inventory to PIVADS and provide them to ARNG air defense battalions.

- Or finally, that the Congress be urged to direct the Department of the Army to procure deployable alternative air defense systems to the ARNG air defense battalions.

FIXED-WING/ADMINISTRATIVE AIRCRAFT

1. GENERAL

- The ARNG has a validated requirement for 81 fixed-wing/administrative aircraft.

- Fixed-wing/administrative aircraft in the ARNG are used:

  - By commanders and staffs for all weather visits to training and operations sites.

  - For combat mission support.

  - For priority transportation of technician inspection, safety and accident teams.

  - For emergency medical evacuation and support.

  - For secure movement of key people, critical materiel, and sensitive documents.

  - For battlefield surveillance.

- Each State is authorized at least one-fixed wing aircraft.

2. SPECIFICS

- In FY80, Congress authorized an add-on buy of eight modern C-12 aircraft for the active Army so that eight modern U-21's could fall out to the ARNG.
- In FY81, Congress authorized an add-on buy of six modern C-12 aircraft for the active Army so that six modern U-21's could fall out to the ARNG.
- In FY82, Congress authorized an add-on buy of six modern C-12's specifically for the ARNG.
- Other than the fall-out of U-21's (some of which have not yet been delivered to the ARNG) and the undelivered C-12's, most fixed wing/administrative aircraft in the ARNG are U-8's and U-3's. Most are not deployable, and all are reaching the end of their programmed service life.

3. NGAUS RECOMMENDATION

- That the Congress be urged to authorize an add-on purchase of 12 C-12 aircraft in the FY83 Defense Budget at a cost of about $23 million. These aircraft to be purchased for the active Army so that 12 modern U-21's can fall out to the ARNG (dollar figures are estimates based on FY82 budget figures plus inflation factor. Final figures may vary when Army contract is let).

ARNG COMMUNICATIONS EQUIPMENT

1. GENERAL

- Many ARNG units, even those with early deployment requirements, have less than required numbers of radios and other communications equipment.
- Often, Guard units have older model radios and communications items which will not net with the modern equipment used by active Army units. Inability of Guard units to communicate with the active units which they support in wartime causes a severe readiness problem.

2. SPECIFICS

- Early deploying Army Guard units are short a total of $1,608,000 worth of required communications items. These Guard units are Force Activity Designator (FAD) III units. FAD III units generally deploy within a month or less of mobilization.
- Later deploying Guard units in FAD IV and FAD V categories are also short needed communications items valued at $9,427,000.

- Specific items needed immediately by ARNG FAD III units are:

Nomenclature	QTY	Cost
Radio Set GRA-39	1	$ 376
Radio Set VRC-64	17	17,680
Radio Set VRC-48	3	28,305
Radio Set VRC-24	3	9,144
Radio Set VRC-12	14	125,888
Radio Set GRC-160	137	118,525
Radio Set FRC-93	6	13,800
Radio Set PRC-74	17	123,131
Antenna GP OE254	681	227,159
Antenna GP RC-292	755	402,846
Installation Kit	545	532,026
Installation Kit	15	9,120
	TOTAL	$ 1,608,000

3. NGAUS RECOMMENDATION

- That the Congress be urged to provide an add-on to the FY83 Defense Budget of $1.608 million to fully equip early deploying ARNG units with modern radio and communications equipment.

- That the Congress be urged to provide additional funding to fill the $9,427 million shortfall in deployable communications equipment required for ARNG FAD IV and FAD V units.

TACTICAL AUTOMATIC DATA PROCESSING EQUIPMENT (ADPE)

1. GENERAL

- ARNG combat divisions and brigades are required to function in an automated mode when entering the Army automated supply system.

- All Army supply functions, to include ammunition, petroleum and lubricants, fuel, rations, clothing and equipment are provided through the automated supply system.

- In lieu of modern Honeywell decentralized automated service support systems (DAS3), ARNG units function in the Army supply system with Univac 1005 computer systems.

- The Univac 1005 system is antiquated and difficult to maintain.

- Univac 1005 maintenance is provided by maintenance contracts through civilian computer firms.

- The Univac 1005 systems cannot be deployed since no civilian computer company would be available to provide required maintenance service in a combat zone.

- Without the computer systems required, Army Guard divisions and brigades would be required to operate a manual supply system upon deployment. The manual system, even if it could be developed, would not provide the rapid support needed in a combat situation.

2. SPECIFICS

- The ARNG requires $35.935 million to provide 58 tactical automatic data processing systems to allow ARNG combat divisions and brigades to operate in the Army automated supply system upon mobilization and deployment.

3. NGAUS RECOMMENDATION

- The Congress should be urged to provide a $35.935 million add-on to the FY83 Defense Budget for procurement of tactical automated data processing equipment for ARNG combat divisions and brigades.

ARMORED PERSONNEL CARRIER (APC) M-113

1. GENERAL

- The M-113 armored personnel carrier is a full-tracked, armored vehicle which provides transportation in a combat environment for up to ten fully armed soldiers and a driver. The armor provides limited protection from small arms fire and fragmentation. It carries a .50 caliber machine gun for offensive and defensive use.

2. SPECIFICS

- Force Activity Designator (FAD) III units of the Army National Guard, the earliest deploying units in the Army Guard, are short 173 of these essential combat vehicles. Purchase of all 173 APCs for FAD III units would cost $13.716 million.

- FAD IV and V units of the ARNG, later deploying units, are short 2,295 APCs. Full buy out of APCs for FAD IV and V units would cost $181.195 million.

- Failure to provide ARNG mechanized infantry forces with APCs means that those units will not have cross-country mobility required of tank-infantry teams in a combat situation. Employment of tanks without infantry support makes every tank extremely vulnerable to light anti-tank weapons carried by individual enemy soldiers engaged in tank-killer missions. Employment of Guard soldiers as part of tank-infantry teams without the protection of armor means that excessive infantry casualties will result from enemy artillery and small arms, and our tanks speed must be reduced to that of walking infantry, thus increasing the vulnerability of each tank to enemy anti-tank fire.

3. NGAUS RECOMMENDATION

- That the Congress be urged to provide an add-on to the FY83 Defense Budget of $13.716 million to purchase 173 APCs for ARNG FAD III units and $181.195 million for 2,295 APCs for ARNG FAD IV and V units.

TRUCKS AND TRAILERS

1. GENERAL

- The Army National Guard, as do all components of the Army, requires large numbers of trucks and trailers of all sizes in order to meet the transportation needs of Guard units. Trucks move personnel, equipment, ammunition, fuel, spare parts, food, water, and many other items to our fighting units.

- In testimony before the Readiness Subcommittee of the Senate Armed Services Committee on 23 February, the Commander, United States Army, Europe, General Frederick Kroesen, stated that one thing that would improve the capability of our deployed forces in

Europe today, more than anything else, would be to upgrade their wheeled vehicle fleet. The Army National Guard wheeled vehicle fleet is no better than our deployed Army force in Europe.

2. SPECIFICS

- Army National Guard Force Activity Designator (FAD) III units, our earliest deploying units, are short 354 trucks of all types, total cost $15.8 million, and 3,859 trailers of all types, total cost $38.2 million.

- ARNG FAD IV and V units, later deploying units, are short 3,864 truck of all types, total cost $119.5 million, and 6,339 trailers of all types, total cost $15.8 million.

- Included in those shortages are fuel tankers, wreckers, five-ton cargo trucks, five-ton dump trucks, ammunition carriers, maintenance shop vans, towed artillery prime movers, eight-ton cargo trucks, water trailers, cargo trailers and special purpose trailers.

3. NGAUS RECOMMENDATION

- That the Congress be urged to add-on to the FY83 defense budget $15.8 million for trucks and $38.2 million for trailers to equip ARNG FAD III early deploying units.

- That the Congress also be urged to add-on $119.5 million for trucks and $15.8 million for trailers to equip ARNG FAD IV and V units.

TOW GUIDED MISSILE CARRIER M-901

1. GENERAL

- The TOW guided missile carrier M-901 is called the improved TOW vehicle, or ITV.

- The ITV consists of armored personnel carrier (APC) chassis (M-113 type) upon which is mounted an anti-tank TOW guided missile system. The system is concealed within the protection of the armored carrier chassis where it can be loaded by the crew. The TOW system is then elevated through the top of the carrier, aimed at an enemy tank and fired while the crew remains under armor protection.

- The APC provides the cross-country mobility required so that the TOW system can be employed in the same environment as enemy tanks. The armored chassis provides limited protection for the anti-tank crew from enemy small arms and fragmentation.

- Anti-tank TOW missile crewmen who are attacked by enemy artillery, mortar or small arms fire while engaging enemy tanks must continue to track the enemy tank for about 20 seconds after the guided missile is fired. Older TOW systems, mounted on jeeps or on top of APCs expose anti-tank crews to enemy fire. The anti-tank crew that has to take cover while firing the older exposed systems will miss the enemy tank. Exposed anti-tank personnel who do not take cover could suffer grievous losses. The ITV reduces these problems.

2. SPECIFICS

- ARNG Force Activity Designator (FAD) III units, the earliest deploying ARNG units, require 120 M-901 ITV systems to provide the anti-tank support required in Guard combat units. Cost of 120 M-901 ITVs is $10.224 million.

- ARNG FAD IV and V, later deploying units, require 558 M-901 ITVs. Total cost of 558 ITVs is $47.54 million.

3. NGAUS RECOMMENDATION

- That the Congress be urged to add-on to the FY83 Defense Budget $10.224 to purchase 120 M-901 ITVs for ARNG FAD III units, and to add $47.54 million to purchase 558 M-901 ITVs for ARNG FAD IV and V units.

8" SELF-PROPELLED HOWITZER M-110A2

1. GENERAL

- The M-110A2 8" self-propelled howitzer is a heavy artillery piece mounted on a full-tracked tank type chassis.

- The M-110A2 howitzer is found in division artillery, corps and Army artillery where it provides accurate, general support fire over extensive ranges. The highly destructive fire of this weapons system adds depth to the battlefield.

2. SPECIFICS

- Army National Guard Force Activity Designator (FAD) III units, the earliest deploying Guard units, are short 27 M-110A2 howitzers. The cost of buying those howitzers for the ARNG is $14.309 million.

- ARNG FAD IV and V units, later deploying units, are short 11 M-110A2 howitzers. The cost of equipping the ARNG with those 11 howitzers is $5.83 million.

- Without a full complement of 8" howitzers, Guard heavy artillery units are limited in range and destructive capability, which allows enemy forces to concentrate dangerously close to our front line units.

3. NGAUS RECOMMENDATION

- That the Congress be urged to provide an add-on to the FY83 Defense Budget of $14.309 million to provide 27 M-110A2 howitzers for ARNG FAD III heavy artillery units.

- That the Congress also be urged to provide an additional add-on of $5.83 million for the purchase of an additional 11 M-110A2 howitzers for Guard FAD IV and V heavy artillery battalions.

AIRCRAFT SUPPORT SYSTEMS

1. GENERAL

- As modern aircraft come into ARNG aviation units, an immediate requirement for the support systems for those aircraft is developed.

- Without the required aircraft support systems, Army Guard aircraft cannot be properly maintained or operated.

2. SPECIFICS

- To operate and maintain the aircraft assigned to, or requested for, ARNG aviation units, the following items are required:

Fire Control Subsystem Test Sets (AH-1S) @ $18,000 X 41	$ 738,000
Guided Missile Subsystem Test Sets (AH-1S) @ $326,974 X 41	13,284,000
Transponder Test Sets AN/APM 305 @ $18,422 X 50	918,000
Exhaust Gas Temperature Test Sets @ $13,647 X 67	938,000
Oscilloscopes AN/USM 281 @ $2,283 X 155	465,000
AVIM Division Shop Sets @ $515,000 X 3	1,545,000
Shelters, Tool Set, Aircraft @ $65,000 X 100	6,500,000
Hydraulic Test Stands @ $85,000 X 4	340,000
CH-54 Special Tools and Test Sets	5,550,000
C-7 Tools and Test Sets	200,000
Air Crew Life Support Equipment (armor, helmets, survival vests, survival radios, etc.)	1,000,000
Automated Information Management Systems (at each ARNG ARNG Avn Fac)	2,900,000
TOTAL	$34,378,000

3. NGAUS RECOMMENDATION

- That $34,378,000 be added to the FY83 Defense Budget to procure aircraft support systems for the Army National Guard (dollar costs may vary because of inflation prior to contract approval).

AIR NATIONAL GUARD PROCUREMENT-FY83

Communications

	*Estimated Cost
ANG communications equipment for ANG units tasked for the Rapid Deployment Force and required for Tri-Tac	$ 36.7 million

Aircraft

Type	No		
F-16	26		$ 475 million
C-130H	36		$ 650 million
F-15	20		$ 585 million
A-10	24		$ 240 million
737/DC9	4		$ 32 million
		Sub-Total	$2.018 billion

Modifications

JT3D MC-135 reengining	48 sets		$ 220 million
FLIR for A-7	24 pods		$ 76 million
TEREC for RF-4	12 sensors		$ 49.7 million
		Sub-Total	$ 345.7 million
		Procurement Grand Total	$ 2.36 billion

*Costs are estimated (not approved by USAF).

ANG COMMUNICATIONS SHORTAGES

1. FOR ANG WORLDWIDE RAPID DEPLOYMENT FORCE UNITS

TRC-97 Tropospheric Scatter Radio Terminal

Provides line-of-sight diffraction or tropospheric scatter communications, tunable in the frequency range of 4.4 GHz to 5.0 GHz. Can provide full-duplex, multichannel voice, data, or teletype communications over ranges of up to 100 miles. Includes a 24-channel voice multiplexer and a 16-channel teletype multiplexer. It is used by combat comm units supporting tactical air base operations as part of the RDF. Combat comm and tactical air control units also use these assets to support deployed tactical Air Force headquarters and tactical air control systems.

SB3614 Tactical Telephone Switchboard

Thirty line, microprocessor-controlled, automatic switchboard. Capability to inter-connect two or three switchboards to provide switching of 60 or 90 lines and trunks. Pushbutton controls permit an operator to monitor, answer, initiate, and extend calls. Subscriber features include direct dialing, precedence and preemption, conferencing, and all intercept. Used by combat comm units in support of tactical air base operations as part of the RDF.

TSC-62 Technical Control Facility

Performs functions associated with the control of communications circuits. Serves as the coordination center for control actions and is used to perform circuit and channel monitoring and testing. Serves as central control point for installation and restoral of inter-intra-site communications circuits and systems. Used by combat comm units to support a deployed tactical air control system.

2. TRI-SERVICE TACTICAL COMMUNICATIONS

Mobile Radio Control Center

Jeep mounted radio system. Provides ground-to-air communications via VHF, UHF and HF. Used by TASG (Tactical Air Support Group) Forward Air Controllers (FACS). Also used as a Quick Reaction Package by combat communications units in support of worldwide contingencies.

Tropo Radios (ANG/TRC-170)

Troposcatter Radio Terminal will be the prime transmission medium for all voice, data and record communications within the TACS (Tactical Air Control System). Radio has 60-channel capacity and, utilizing various power outputs, has a range of 100 to 200 miles. Used by tactical air control and combat comm units.

Telephone Systems

AN/TTC-41 (120 line capability)
AN/TTC-42 (200 line capability)

Will be employed to provide telephone service to local subscribers, access to all other points in the TACS network and interface to DCS (Defense Communications System) and allied telephone systems. Used by both air control and combat comm units.

Tech Control

Circuit monitoring van used in support of the TACS and maintained by both combat comm and tactical air control units. Functional description is the same as the TSC-62.

Communications Center

Provides the basis of the TACS switched record communications network; allows teletype message traffic to be switched throughout the TACS and

to/from DCS and allied users. Operated and maintained by both tactical air control and combat comm units.

3. OTHER EQUIPMENT

TSC-94A Satellite Terminals

Provides a multichannel SHF satellite link in the tactical environment. Used by combat comm units to support a tactical Air Force headquarters. Also used by tactical air control units to support Control and Reporting Centers and Control and Reporting Posts.

4. SUMMARY OF REQUIREMENTS FOR FY83

For ANG Worldwide Rapid Deployment Force	Units	Millions
TRC-97 Tropospheric Scatter Radio Terminal	15	$5.80
SB-3614 Telephone Switches	2	.08
TSC-62 Tech Control	2	2.00
Sub-Total for RDF		$7.88
For Tri-Service Tactical Communications		
Mobile Radio Control Centers	10	3.80
Tropo Radios	15	15.90
120 Line Telephone Systems	2	.80
30 Line Telephone Systems	10	.40
Tech Control	3	6.30
Communications Centers	4	1.60
Sub-Total for Tri-TAC		$28.80
Grand Total		$36.7

5. NGAUS RECOMMENDATION

That the Congress add-on funding in FY83 for $36.7 million for equipment to equip ANG units tasked in the RDF and for Tri-Service Communications.

MODERNIZATION OF AIR NATIONAL GUARD TACTICAL FIGHTER/FIGHTER INTERCEPTOR FORCE

1. GENERAL

- The FY83 Air National Guard tactical fighter, tactical air support and interceptor forces are structured as follows:

Tactical Units	Fighter Interceptor Units
14 - F-4 units	5 - F-106 units
14 - A-7 units	5 - F-4 units
5 - A-10 units	
3 - OA-37 units	
1 - O-2 unit	
1 - F-16 unit	

  - The ANG O-2 and OA-37 units are not considered to be survivable in a NATO environment and should be modernized immediately.
  - There is no programmed modernization for the ANG O-2 and OA-37 units.
  - Of the 19 ANG F-4 units, 12 are equipped with "C" models that average 18 years of age.
  - The ANG F-106 aircraft average 22 years of age.

- The ANG needs to modernize both its tactical fighter and interceptor force in the near future if it is to remain a viable part of the Total Force. The average age of the ANG aircraft reflects a relative loss of capabilities compared to the potential threats.

- Operations and maintenance support costs of F-4 aircraft are high and will continue to rise.
- ANG units, with experienced aircrews and highly qualified maintenance personnel, make them ideally suited to high technology F-15's and F-16's.
- Commonality with active Air Force aircraft offers significant cost effectiveness.
- Add-on of F-15's and F-16's for the ANG in multi-year procurement contracts would reduce flyaway costs of aircraft.

2. SPECIFICS

- The FY83 DoD Budget requests procurement of 42 F-15's and 120 F-16's.
- Add-ons of 20 F-15's and 26 F-16's to the FY83 Budget would accelerate modernization of ANG tactical fighter and/or interceptor units.
- Multi-year contracts for FY83-85 should be negotiated to add 20 F-15's and 26 F-15's each year to the DoD programmed procurement.

3. NGAUS RECOMMENDATION

- That the Congress add-on 20 F-15's and 26 F-16's for the ANG to FY83 aircraft procurement in order to accelerate modernization of ANG tactical fighter and interceptor units.

MODERNIZATION OF AIR NATIONAL GUARD/ AIR FORCE RESERVE TACTICAL AIRLIFT

1. GENERAL

- The airlift units of the Air Force Reserve and Air National Guard provide 64% of the Air Force's tactical airlift assets and services.
- The C-130A tactical airlift aircraft, the backbone of the Air Reserve Forces, now average over 24 years of age and are the only "A" models flying today. The Royal Australian Air Force (RAAF) elected to retire their 12 C-130A's and have replaced them with C-130H's.
- The C-130A was last produced in 1959, thus it has many out-of-production systems and components. For rotational assignments (TDY's) overseas all C-130A spare parts and equipment must be carried onboard to support these aircraft as there are no en route staging areas or C-130A spare parts pools anywhere except the CONUS.
- Air Force records show the C-130A's to be much more costly per flight hour/operation than the modern C-130H's. USAF data currently show the annual cost of depot maintenance of the C-130A's to be $178,579 per aircraft compared to $82,956 per aircraft for the C-130H. These costs do not reflect the added loss of airlift due to the extensive downtime required for the unscheduled structural repairs of the C-130A's wings.
- A combination of corrosion and fatigue of the outer and center wings of the C-130A require continuous inspection and costly repairs and/or replacement of structural members to keep the aircraft in a flyable condition. Current and contemplated Air Force C-130A wing structural inspections will require a continuous structural repair program through the 1980's.
- The C-130A's airlift capability cannot match the C-130H, which offers 26% more payload, 52% more range and 11% higher cruise speed. Further

degradation can be expected as heavier structural repairs are required in the future.

2. SPECIFICS

- In FY83 the modernization of the Air National Guard and Air Force Reserve must continue because:
  - There is no planned replacement for the C-130 in the tactical airlift role.
  - The recent DoD decision to buy C-5/KC-10 strategic airlifters does not remedy the shortfall of intratheater airlift.
  - The USAF recognizes a shortage of 28 C-130 aircraft, including 14 in the active force Backup Aircraft Inventory (BAI); however, there is no plan to procure new C-130's in FY83.
  - There is no planned transfer of active force C-130E tactical airlifters to the ANG and AFRES.
  - The C-130A's lack the capability to meet the modern airlift requirements of the Air National Guard and Air Force Reserve.

3. NGAUS RECOMMENDATION

- That Congress add-on procurement in FY83 of 36 C-130H's for the active Air Force. In turn, this would allow fallout of 36 C-130E's to the Air National Guard and Air Force Reserve (two 8 PAA units plus 2 BAI for the ANG and two PAA units plus two BAI for the AFRES).

ADD-ON BUY OF 24 A-10'S FOR
THE AIR NATIONAL GUARD

1. GENERAL

- The A-10A is designed for the Close Air Support mission to bring highly mobile, lethal fire power to bear in direct support of U.S. troops fighting on the battlefield. The A-10A is the true bridge between the Air Force and the Army. The GAU-8/A 30mm gun with 1174 rounds of ammunition gives the A-10A the ability to destroy highly armored precise battlefield targets (tanks). The A-10A is designed with 11 stations for carrying heavy (15,000 lbs.) and diverse payloads of free fall ordnance.
- At present the Air National Guard has five squadrons equipped with A-10A Thunderbolt II aircraft.

174th Tactical Fighter Wing	Syracuse, NY	24 aircraft
103rd Tactical Fighter Group	Windsor Locks, CT	18 aircraft
104th Tactical Fighter Group	Westfield, MA	18 aircraft
175th Tactical Fighter Group	Baltimore, MD	18 aircraft
128th Tactical Fighter Group	Truax Field, WI	18 aircraft

Four of the five are at three-fourths strength. Resolution No. 30, adopted at the 103d General Conference of the National Guard Association of the United States in October 1981, mandates that NGAUS give high priority to bringing all ANG tactical fighter units to full strength (24 aircraft).

2. SPECIFICS

- The effectiveness of four ANG A-10A units would be increased by 33-1/3% by increasing PAA from 18 to 24.
- Base assets, aircraft support equipment, and maintenance personnel are not required to be increased on a pro-rata basis with the number of air-

craft. Studies have shown that an A-10A fighter unit can be increased by 33-1/3% (18PAA to 24PAA) with approximately an 8% increase in support cost.

- Production cost analyses have shown that the unit cost of the additional 24 A-10's will be approximately two-thirds the cost of the 20 A-10's in the FY83 budget request due to the spreading of many fixed and overhead costs over a greater production quantity.
- There is no present program to increase the PAA of the four ANG A-10 units to 24PAA.
- All four locations of the ANG A-10 18PAA units can accommodate 24PAA.
- Active A-10 units in the CONUS possess 24PAA.

3. NGAUS RECOMMENDATION

- That Congress add-on procurement in FY83 of 24 A-10's for the Air National Guard. The total Air Force procurement of A-10's would be 44.

ADD-ON BUY OF USED 737/DC-9 COMMERCIAL AIRCRAFT
FOR USAF/ANG TEAM TRAVEL

1. GENERAL

- Four excess T-43's were assigned in FY79 to D.C. ANG, Andrews AFB, Maryland.
- Air Force navigator training requirements necessitated withdrawal of two T-43's in September 1981 and the remaining two T-43's will be returned to the Air Force in October 1982.
- Military Airlift Command (MAC) provides centralized scheduling of team travel.
- In FY80, the ANG flew 4027 hours carrying 53,000 passengers in support of team travel.
- In FY81, the ANG flew 3644 hours carrying 60,000 passengers in support of team travel.
- The T-43's are being replaced with four T-39's which greatly reduce capability to support team travel requirements.

2. ALTERNATIVES

- Procure four used Boeing 737's or DC-9's as replacement aircraft.
- Advantages
  - Low procurement costs ($30-32 million).
  - Low operations and maintenance costs.
  - Logistics support presently available for both aircraft at Andrews AFB.
  - No training required for aircrews and maintenance crews.
  - Will satisfy all USAF/ANG travel requirements.

3. NGAUS RECOMMENDATION

- That Congress in FY83 add-on a buy of four used 737/DC-9 commercial aircraft for the ANG to support USAF/ANG team travel.

KC-135 REENGINING

1. GENERAL

- The KC-135A fleet was originally procured to support only the strategic bomber force, but is now tasked to support over 11,000 U.S. and NATO receivers composed of bomber, tactical and general purpose aircraft. Consequently, total refueling requirements far exceed present KC-135A fleet capability. Reengining will markedly improve productivity of the KC-135 tanker fleet, will eliminate the rapidly-rising maintenance costs of the present aging and inefficient J57 engine, and increase the capability of this valuable and unique tanker asset that has over 70% of its useful life still ahead.

- Reengining the KC-135A will also reduce noise levels, thereby helping to alleviate community relations problems of Air National Guard, Air Force Reserve and U.S. Air Force bases co-located in urban areas. Air pollution and engine smoke are also reduced significantly.

- Since 1978, Congress has strongly supported reengining the KC-135 with the modern, fuel-efficient CFM56 engine, which will provide an effective solution to the above-cited problems of mission capability, excessive maintenance costs of the Pacer Grade overhaul program, and improve community relations. The initial CFM56 installation in a KC-135 will be in mid-1982 and, after a deliberate Air Force test program, the planned production program could permit 100 KC-135's to be mission-ready by 1986.

- While the NGAUS supports the CFM56 program, certain ANG tanker units are experiencing acute community relations problems caused by the noisy, smoky, low-performance J57 engine now installed in the KC-135A. Near-term relief is highly desirable for such unique situations, and could be provided by the interim installation of the commercially-proven JT3D engine which is now being installed in 18 special purpose USAF C-135's.

- In addition to its continuing support of the CFM56 long-term reengining program, Congress has approved $85M in FY82 to reengine 26-28 KC-135's with JT3D's. This program is an effective near-term solution to the community relations problems now being experienced by some ANG tanker units.

2. SPECIFICS

- JT3D advantages over J57 —

  - Take-off thrust 18,000 vs. 13,750 (WET)
  - Fuel consumption 12% less
  - Noise reduced 60%
  - Emissions reduced 90%
  - Thrust reverse capability
  - Up to 400% improved reliability
  - 137 donor aircraft identified in U.S. and Canada
  - 80% of JT3D parts are federally stock listed
  - JT3D engine parts are 80% common with USAF TF-33 engines
  - JT3D tooling is over 90% common with USAF TF-33 engines.

3. NGAUS RECOMMENDATION

- That Congress add-on approximately $220 million in FY83 for the procurement of 48 sets (192 engines) of JT3D engines for ANG KC-135 tankers.

- That Congress support the DoD Budget request for the CFM56.

FLIR
(FORWARD LOOKING INFRARED RADAR)

1. GENERAL

- During 1979, Air National Guard (ANG) A-7D units were assigned a night attack mission. Subsequently, a Mission Element Need Statement (MENS) validated an ANG requirement for an A-7D night attack system. The requirement has appeared in each year's Program Objective Memorandum (POM), yet remains unfunded.

- The FLIR modification for A-7 aircraft involves relatively minor changes in wiring and hardware. A FLIR pod is hung on an external wing pylon; the infrared image is displayed on the pilot's Head Up Display (HUD). Magnification of the FLIR field of view permits precise aiming index placing, resulting in weapons delivery accuracy equal to, or better than, daytime accuracy. The system is compatible with the current inventory of munitions, and is an off-the-shelf item currently in use on U.S. Navy A-7E's. The system has been evaluated and endorsed by over 200 AF and ANG pilots.

- Currently, two ANG A-7D units are assigned to the Rapid Deployment Joint Task Force (RDJTF), yet cannot effectively accomplish the night attack mission. Funds should be authorized to equip ANG RDJTF A-7D squadrons with the FLIR system.

2. NGAUS RECOMMENDATION

- That Congress add-on approximately $76 million in FY83 for the procurement of 24 FLIR systems for ANG A-7D squadrons assigned to the RDJTF.

TEREC
(TACTICAL ELECTRONIC RECONNAISSANCE SYSTEM)

1. GENERAL

- The ANG is required to furnish two RF-4C tactical reconnaissance squadrons to the Rapid Deployment Joint Task Force (RDJTF). Although this increased reliance on ANG units continues each year, the modernization of these forces has not kept pace with their added responsibilities.

- The addition of a TEREC system to the active force in 1975 has revolutionized tactical reconnaissance operational concepts from providing after-the-fact photographs to delivering real-time threat data that the tactical commander can act upon.

- The TEREC system is an electronic intelligence (ELINT) gathering sensor. It has two primary missions — to generate and maintain the hostile order of battle (EOB); and to detect and provide the accurate location, in real-time, of significant emitters. ELINT data collected via the TEREC system are stored on board and also data linked to TEREC remote terminals (TRT's) and Portable Exploitation Processors (T-PEP). TRT's are highly mobile and are being procured for Command & Control modes and fighting elements. T-PEP can process mission tapes as well as receive data line transmissions.

- TEREC is a survivable real-time ELINT sensor of enormous benefit to our wartime fighting capability.

NGAUS RECOMMENDATION

- That Congress add-on approximately $49.7 million in FY83 for the procurement of TEREC systems for 12 ANG RF-4C aircraft committed to the RDJTF.

Mr. STRATTON. Thank you very much, General. That was a very fine statement.

We have been reading in the press lately that even the 5-year plan offered by the Defense Department, which according to the stories is going to cost about $1.6 trillion, is not adequate to meet all of our commitments that we might have to carry out. In connection with those contingency plans, is it not the case that the Guard divisions and the Guard units are regarded as a part of the force that would have to be used?

General GREENLIEF. Yes, sir.

Mr. STRATTON. Isn't it the case that they are to be used as existing units and not just as replacements for Regular Forces?

General GREENLIEF. Mr. Chairman, those Army and Air Guard units as well as Army Reserve and Air Force Reserve units are required by the war plans. Now there is not really a manpower problem on the air side. With regard to the Army Guard and Army Reserve, in my view there is a threat that some units might have to be used as fillers because of the disastrous condition of the IRR. Now that would be a very traumatic thing for the members of those units, but that is not even the important part.

The most important fact is that those units in the Army Guard and Reserve represent 50 percent of the combat power of the U.S. Army. To the extent that any of those units were converted to individual fillers we would be eliminating units required to fight.

Now, 50 percent of the U.S. Army could be destroyed at one fell swoop if they were converted to fillers.

Mr. STRATTON. Isn't it the case that our contingency plans do count on these Army National Guard divisions as integral divisions to provide certain resources?

General GREENLIEF. Precisely. Mr. Chairman, that is one of the reasons why I am so concerned about the lack of air defense weapons for eight National Guard combat divisions. These divisions are required by the war plans to fight. They have no air defense weapons. There are none programed for them to my knowledge. It is inconceivable that we would have U.S. combat divisions without air defense.

Yes, they are required in the war plans.

Mr. STRATTON. That is the thing that bothers me. How can we talk about a total force concept unless we have the equipment for those forces to utilize in an organized and effective way?

General GREENLIEF. Saying it crudely, Mr. Chairman, if we don't equip the Army Guard and Army Reserve so that they can fight and carry out their missions we ought to start spelling total force with an "A". It becomes a force without equipment.

Mr. STRATTON. That is well put.

Mr. Bennett.

Mr. BENNETT. I would like to make one comment. I note you came from the Nebraska National Guard in World War II. I was a second lieutenant about the same time in the Illinois National Guard. Certainly any of us who have been through any of those wars of substantial size realize in actual combat the National Guard is like other divisions. They were put in the regular divisions and did the combat.

I had no connection with the Chicago National Guard. I was placed in it. So we have the practical experience of knowing this is not a theoretical thing you are talking about. These divisions are going to be divisions that are going to be doing the fighting on the frontlines. There will be no distinction at that time whether they came from the National Guard or not.

General GREENLIEF. Precisely.

Mr. BENNETT. So you have a situation where we are kind of kidding ourselves in thinking these are not something that we are heavily relying on. We are heavily relying on these divisions.

General GREENLIEF. Mr. Bennett, in this Nation we can never count on maintaining a standing Army of the size required to carry out our commitment. As a nation we have committed to those things and we need a force and they must have the Guard and the Reserve. Those units are needed. It is the only kind of defense that we can afford. Thus far we have not indicated a willingness to afford even that.

Mr. BENNETT. I have no further comments, Mr. Chairman.

Mr. STRATTON. Mr. Kramer.

Mr. KRAMER. Yes, Mr. Chairman, thank you.

As Divad and Roland and Patriot come into the active duty force structure, will the present air defense systems such as the Chaparral and things of that sort be sent to the Guard?

Mr. WHITE. Mr. Kramer, as the Divad gun goes into the inventory, it eventually forces the Vulcan out of the mechanized and armored divisions to the Guard and Reserve. It is quite some ways down the line because Divad production has just begun. It will be 2½ to 3 years. However, without the product improvements, it is only slightly better than the 40-millimeter Duster that they have now. It needs product improvement to it.

Chaparrals will not be forced out of the inventory because there is no replacement system. With the demise of Roland there is no replacement system coming down for Chaparral.

Mr. KRAMER. The 33 percent of the combat divisions, does that represent an add on to the number you most commonly hear as 16 divisions? Those are all active duty and this is an add on to that?

General GREENLIEF. Unfortunately, you do commonly hear the 16 divisions. The proper statement is that there are 24 divisions in the U.S. Army, 8 of which are furnished by the Army National Guard, 16 of which are furnished by the Active Army.

There is a common misunderstanding there. Of the 16 Active Army divisions, 9 of them also have National Guard units. The 16 Active Army divisions are not complete. Four of those divisions have one full National Guard brigade in them. The other remaining nine divisions have one or several battalions of the National Guard.

The only full complete U.S. Army divisions that are on active duty are seven. There are seven real, true Active Army Divisions. There are nine of them that are composite Army Guard and Active Army and there are eight that are totally Army Guard. That is the 24.

Mr. KRAMER. How do the Reserves fit into that particular picture?

General GREENLIEF. The Army Reserve is part of the 25th Division in Hawaii. They may be in others in CONUS, but I am not aware of that. I believe they have one battalion of the 100th Infantry in the 25th Division in Hawaii and the National Guard has a brigade as part of that division.

Mr. BENNETT. Are you saying there is only one Army Reserve division?

General GREENLIEF. No, sir. What I said was, to my knowledge, and I do not pretend to be an expert in the USAR, but from memory the U.S. Army Reserve, the 100th battalion in Hawaii, participates along with the Hawaiian Army National Guard 29th Brigade as a full member of the 25th U.S. Army Infantry Division to be mobilized.

Now the USAR has training divisions. They have no combat divisions. USAR combat battalions may well participate in some other Active Army divisions that I am not aware of. Certainly they produce outstanding units.

Mr. KRAMER. What does this budget do as it is requested in terms of meeting the air defense requirements of the Guard?

Mr. STRATTON. Judging from what Mr. Klein has said, there is no specific indication of any designation for the Guard. We will have the Defense Department people up here this afternoon on this particular subject. I think the question should be addressed to them.

General GREENLIEF. To my knowledge, Mr. Kramer, there is no procurement of weapons for the eight Army National Guard air defense battalions in the 1983 budget.

Mr. White described it very well. As the Army gets the Divad for their heavy divisions, armor and mech, that will permit the Vulcan to fall out of the Active Army divisions and that can be available to the Guard. But there is no planned procurement for the Chaparral and the air defense weapon system is Vulcan-Chaparral. There is none in the procurement.

My belief is that there is none in POM in the outyears. There is no plan that I am aware of to modernize air defense of those eight battalions. So you are talking about sending eight Army Guard combat divisions to war without air defense weapons.

Mr. KRAMER. You have obviously had conversations with DOD and people in the active duty force structure, Army staff and things of that sort. What is their response to your argument?

General GREENLIEF. They wish they could afford it. Please believe me, Mr. Chairman and gentleman, I am not suggesting that the Army or the Air Force don't like the Guard or that they don't want to support it.

The problem of national defense is a very, very expensive thing which you gentlemen know better than anybody else. There is a dollar total provided by OMB to OSD and it is not enough in their view to equip both the Actives and the National Guard and Reserve, so the Actives get equipped to the extent they can and the Guard and Reserve get hand-me-downs when they are available.

Mr. WHITE. Mr. Kramer, may I add one point that I think you will find usable?

One of the problems with the Vulcan is its rather limited effective range and lethality, and target acquisition is another problem. There is a program called PIVADS which is an improved program

which would significantly enhance the capability of the Vulcan system.

Two years ago in fiscal year 1981 this committee included money to R. & D. the Vulcan product improvement package and to begin equipping the National Guard units with the product-improved Vulcan. The Army has yet to spend that money. They have resisted that for 2 years and have kept it as an obligated balance.

Although they have no better plan they don't want to do that.

General GREENLIEF. I don't want to pose here as an air defense expert. As a matter of fact, I do have soldiers of experience with the Army National Guard air defense battalions. I have done a certain amount of research on this subject.

I would agree with Mr. White. Assuming the Army recognizes that is an improvement I would be happy to have PIVADS come in. I believe it is an improvement. It is an improvement over what they got. They don't like what they got. We would settle for what they got, but we think it should be improved with PIVADS.

Mr. STRATTON. What do the divisions have now, Quad-50's or something or other?

General GREENLIEF. We have the M-42 Duster, which is a twin 40-millimeter cannon, Bofors type, that I know you are familiar with as a Navy officer. It is mounted on an old light tank chassis. You have not seen a light tank in the U.S. Army for a long, long time. We have very great difficulty maintaining those chassis. We do it by cannibalization.

In our view there is no way that tank chassis could be maintained in combat. With the gun system, you know, the gunners track the target, cranking it by wheel by hand like I suspect you have seen on some Navy ships some years ago. That is how ancient it is. The ammunition is so bad that in last year's summer training they had to discontinue using the HE ammunition for training because it was unsafe. That is the weapon system for eight Army National Guard combat divisions.

Mr. KRAMER. Do we have any surge capability at all in terms of using these air defense systems if we had to?

Mr. WHITE. Vulcan has been out of production for many years. Chaparral could be produced. Two years ago I believe the committee added funds for 32 fire units which are in producton now. That coupled with FMS sales perhaps there is a continuing line. Certainly Chaparral is a producible item.

Aside from product-improved Vulcans going to them, Chaparral is the only real immediate option that goes to that battalion. Essentially those two go together in a mission.

General GREENLIEF. Mr. Kramer, I recognize that I am being presumptuous and the Army will certainly tell me I am, but Mr. White referred to the 32 Chaparral fire units that this committee authorized which was authorized to provide the Army a maintenance float, which I understand they need.

If you have an opportunity to read my proposal, what we propose is that the U.S. Army divert 16 of those Chaparral fire units from that maintenance float, 2 to each of our battalions. That combined with a follow-on buy and some test sets that we asked for that only cost $6 million could start us training with a modern air defense weapon in 1983.

Now there is no point in starting it unless we are going to be equipped later on, but we are spending an awful lot of money training eight battalions with a weapon that can't be used. They ought to be equipped, sir. That does offer the opportunity.

Mr. HUNTER. The Duster is an antiaircraft weapon?

General GREENLIEF. Yes, sir.

Mr. HUNTER. Is that the same thing we used in Vietnam? We used what we called Dusters. They have twin——

General GREENLIEF. They were our Dusters, sir.

Mr. HUNTER. They were pretty effective on land.

General GREENLIEF. Yes, sir. As a matter of fact, on two occasions to my memory the U.S. Army had no Dusters in their inventory, they recalled Dusters from our inventory, deployed them, used them in a ground role, and it is an effective weapon system on the ground.

Mr. HUNTER. We used them on perimeter defense.

General GREENLIEF. Yes, sir. It has a solid round capability as well as the HE and is a very good antipersonnel weapon. People move slowly enough that you can track them like that. Aircraft don't. But today those light tank chassis can't be maintined except with the greatest of difficulty and by cannibalization. The weapon system, which is in our units as an air defense weapon system, not a ground weapon, is just totally inadequate.

The Army recognizes that. They would like to fix it. We would like to ask you gentlemen to help them fix it.

Mr. STRATTON. Any questions?

Mr. HUNTER. I just have one or two, Mr. Chairman.

What type of tank-killing capability does the Guard have? If we are looking at mobilization of the Guard basically we are looking at Europe?

General GREENLIEF. Mr. Hunter, the Army National Guard is supposed to have all of the tank-killing capability that Active Army units do. Start with the AH-1S that I have already addressed, the great bulk of our fleet——

Mr. HUNTER. The AH-1S?

General GREENLIEF. That is the TOW Cobra, a great tank killer.

Mr. HUNTER. That is the one we are producing now for $3½ million apiece or $4½ million or $5 million?

General GREENLIEF. It is being produced because this committee and others have believed the line should be kept open and that there should be weapons procured for the Army National Guard. It has been kept open by the Congress trying to meet our need. That is one tank killer and we have talked about that. We have the TOW weapon.

Mr. HUNTER. I would assume if we go to the new attack helicopter there will be a lot of Cobras around for the Guard?

General GREENLIEF. No, sir. That is the point. When the AH-64 program buy is completed, if it is delivered on time and every one the Army has requested is built, and if all the AH-1G models which are nontowed Cobras if all of the AH-1G models in the Army inventory are converted to "S" models and given to the Guard and if we get all the AH-1S's that the Congress has bought plus some old AH-1S models, the National Guard in 1990 will still be short 286 attack helicopters.

Mr. HUNTER. How many will it have?

General GREENLIEF. Our total requirement for attack helicopters is on the order of 400.

Mr. WHITE. The total Active Army requirement for Cobras is 936, I believe. The total procurement program as now structured for the AH-64 is only 446. So they are not planning a one-for-one replacement. They are planning essentially a high-low mix. Under no circumstances could it force more than 400 helicopters out of the active inventory.

General GREENLIEF. The Army plan contemplates keeping both the AH-64 and AH-1S as combat equipment. The Army National Guard requirement attack helicopters is 369.

Mr. HUNTER. You are only going to have 30 percent of what you need?

General GREENLIEF. That is correct, sir. Out of 369 we will be short 286.

Mr. HUNTER. You will have roughly 115 or 120 helicopters. You are only going to have that many?

General GREENLIEF. As I add it up we would have 83.

Mr. HUNTER. You are saying that even if you take down what is left over from the high-low mix balance that the Army is going to achieve with the AH-64 you are only going to receive 83 of those Cobras?

General GREENLIEF. Yes, sir.

Mr. HUNTER. How many Cobras do we have now?

Mr. WHITE. We have about 900.

Mr. HUNTER. What has happened to them?

Mr. WHITE. Most of those are going to be retained in the Active Force inventory.

General GREENLIEF. The AAO for the Army on attack helicopters consists of 1,072 AH-1S plus it was 536 AH-64's which they have now reduced to 446. Of that total another Guard is supposed to have 369. There is another factor involved and that is that the Army is planning to go to something called division 86, new structure.

I have reviewed that in my computation going to division 86 will increase the Army National Guard requirement for attack helicopters by another 100. We can't get there from here unless we buy them.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. BENNETT [presiding]. Thank you all.

I think we had better hear from Captain Coleman now.

We sure appreciate your being with us, gentlemen. You have made it real clear that we are not doing everything we ought to do. We will see what we can do to help.

General GREENLIEF. Thank you, Mr. Chairman, and members.

Mr. BENNETT. Captain Coleman, president of the Naval Reserve Association.

STATEMENT OF CAPT. CURTIN R. COLEMAN II, USNR, PRESIDENT, NAVAL RESERVE ASSOCIATION

Captain COLEMAN. Mr. Chairman, I have Admiral Forrest, our national executive director, on my right and Captain Bell, our con-

sultant on my left. I also have with us here today Admiral Smith, our immediate past national president, and I also have our legislative vice president, Bob Lowrey, in the room.

Mr. Chairman and committee members, I request that my prepared testimony be entered into the record.

Mr. BENNETT. Without objection it is so ordered.

Captain COLEMAN. With the concurrence of the committee I would like to summarize my prepared statement.

The Naval Enlisted Reserve Association has requested that we also represent them before this committee today. So we are speaking both on behalf of them and NRA.

Mr. Chairman and committee members, the Naval Reserve Association is very appreciative of the opportunity to testify before you today. This committee has been very responsive in the past to the Guard and Reserve modernization needs. Unfortunately, the proposed budget for fiscal year 1983 illustrates that the Pentagon does not yet understand the message you gave them last year.

The Naval Reserve Association has been very disappointed with the administration's lack of followthrough on the campaign and confirmation statements of Presidential Candidate Reagan and Secretary of Defense Designee Caspar Weinberger. Both spoke of the importance of the Guard and Reserve in the defense structure and pledged to build up the Reserve components.

Mr. Weinberger stated that the Guard and Reserve should, without any question, be strengthened, partially by getting them equipment they would be using in combat. He also observed that some of the Reserve units could already outperform those of the Active Force and added that, traditionally, we have depended upon the Guard and Reserve and that trained Reserves are necessary for a rapid expandable force.

There is no inclination on the part of DOD to conduct, or have conducted, indepth looks at possible wartime roles, missions, and tasks which could be assigned to the Guard and Reserve at considerable dollar savings.

Another issue is the equipping of the Guard and Reserve units. It is criminal to expect some of the present units to go into combat with the obsolete equipment on hand. NRA appreciates the efforts of this committee and those of the defense appropriations subcommittee to correct some of the equipment shortfalls in the Guard and Reserve. It was particularly appreciated during last year's budget process.

This committee rocked the boat last year when it added almost $1 billion to Guard and Reserve procurement. Although much of that add-on was dropped out in conference, it was hoped that the message got across to the services. Unfortunately, the Guard and Reserve dollars are not in the fiscal year 1983 budget.

Mr. Chairman, what the NRA is offering today are alternatives which should save considerable money in the out years without losing any wartime capability. In fact, each of the proposals made by NRA today will provide a quantum increase in readiness, fighting capability, response times and operational experience. Given the hardware, the Naval reservists will equal or outgain the Active Forces any time.

Last year both Houses put in additional funds buy Tactical/Navigation Modernization kits for Reserve P-3A/B's. The money was lost in the conference. This year there are no dollars in the budget for the TAC/NAV MOD leaving 71 Reserve aircraft without the capability to perform the MPA mission. The cutback in the P-3C procurement has compounded the situation for the out years.

NRA proposes that the Congress fund the TAC/NAV MOD for the remaining 71 Reserve P-3A/B's in the fiscal years 1983 and 1984. The cost for 36 aircraft in fiscal year 1983 would be $50.4 million with the rest of the modernization kits being purchased in fiscal year 1984.

Also proposed is the procurement of three P-3C Update III, Orions, each year for the next 3 years. This will provide the Naval Reserve with the hardware to carry out its assigned mission of training 72 crews to augment the regular Navy P-3C squadrons in the event of a mobilization situation. The cost would be $103.5 million in fiscal year 1983 for the three aircraft.

The replacement of the ancient C-118's in the Naval Reserve is a must if the command is to meet its mobilization readiness requirements. To fill this requirement, NRA proposes the funding for the purchase of eight used DC-9's at the cost of $57.8 million in procurement and $15.7 million in O. & M.N.R. over the budget request for fiscal year 1983.

An alternate plan would be to lease 12 used DC-9's for $16.2 million in procurement and $27.7 million in O. & M.N.R. over the budget request. Also requested is $119.75 million for four C-9B's as part of the plan to supply the remaining C-9B requirement of the fleet and Marine Corps (11 aircraft) over a 3-year period.

We apologize for a typographical error which appears on page 30 of our prepared statement. The sentence following the asterisk in the approximate center of that page should read "Costs based upon a known offer * * * et cetera."

Finally, NRA recommends to the committee that the modernization of the Reserve tactical air wings be commenced this year with the procurement of eight A-6E Intruders each year for 5 years. This would provide a squadron of A-6E's in each of the Reserve air wings as well as a four-plane unit of KA-6 tankers for both Reserve air wings 20 and 30. The cost over budget for fiscal year 1983 would be $161.4 million.

Funding of this request would commence the modernization of the two Reserve air wings and be the first concrete step toward implementing the intention expressed by Secretary Lehman and Admiral Hayward of modernizing the Naval Air Reserve TACAIR community.

It would also be the initial action by the Congress to designate and equip one or both of the units as the 13th and/or 14th air wings for the wartime battle groups now proposed.

"Total force" and "one navy" are terms which can finally be used to aptly describe the real world if the Congress will now take the lead in the effort to modernize the Guard and Reserve. With reasonable planning and the execution of the plan, the Nation will realize increased security and the harassed taxpayer will benefit for many years to come.

Mr. Chairman, committee members, NRA sincerely appreciates your leadership in providing this country with a Guard and Reserve capable of stepping into the breech when they are needed in a possible conflict. For the most part, the capability is there, if the support is provided.

When the Reserve components have been manned and equipped and when they have been called, they have performed admirably in combat and in combat support roles. NRA recommends that this Congress, this committee, pick up the ball and move out sharply. The Naval Reserve and the other Reserve components will repay your efforts many times in cost-effective wartime capable assets.

Mr. Chairman, in the interest of time conservation, your time that is, I have condensed the justification portion of my summary to a point where I am just a little concerned that our message has not been transmitted effectively. I hope the committee will seriously consider the proposals detailed in the prepared testimony.

I feel those proposals could have a profound effect on the future of our Naval Reserve.

I might add apropos to the comments that Chairman Stratton made at the commencement of today's hearing in getting definitive figures and items on Reserve and Guard procurement we might possibly have a Reserve procurement account or at least a separate budget activity for the Guard and Reserve to help resolve this problem which seems to be a continuing one.

We will be pleased to attempt to answer any questions you may have.

Thank you, Mr. Chairman.

Written Statement of Capt. Curtin R. Coleman

Mr. Chairman, committee members, the Naval Reserve Association is very appreciative of the opportunity to testify before you today. This committee has been very responsive in the past to the Guard and Reserve modernization needs. Unfortunately, the proposed budget for FY 1983 illustrates that the Pentagon does not yet understand the message you gave them last year.

The Naval Reserve Association has been very disappointed with the Administration's lack of follow-through on the campaign and confirmation statements of President-elect Reagan and Secretary of Defense designee Casper Weinberger. Both spoke of the importance of the Guard and Reserve in the Defense structure and pledged to build-up the Reserve Components. Mr. Weinberger stated that the Guard and Reserve should, without any question, be strengthened, partially by getting them equipment they would be using in combat. He also observed that some of the Reserve units could already outperform those of the active force and added that traditionally we have depended upon the Guard and Reserve and that trained Reserves are necessary for a rapid expandible force.

Last year the Guard and Reserve add-ons to the budget in the Authorization Bill were, for the most part, deleted in the Authorization Conference at the insistence of the same Secretary Weinberger. This year we see no change in the attitude that has existed in DOD for years. We made a statement last year which bears repeating today, and I quote, "Words which lavishly and profusely pour forth in support of the Reserve and Guard do not cost money, while people, equipment and training do" unquote.

There is no inclination on the part of DOD to conduct, or have conducted, in-depth looks at possible wartime roles, missions and tasks which could be assigned to the Guard and Reserve at considerable dollar savings. Another issue is the equipping of the G/R units. It is criminal to expect some of the present units to go into combat with the obsolete equipment on hand. NRA appreciates the efforts of this Committee and those of the Defense Appropriations Sub-Committee to correct some of the equipment shortfalls in the G/R. It was particularly appreciated during last year's budget process.

NRA IS PLEASED WITH THE STRONG BIPARTISAN EFFORT TO SHORE UP THE DEFENSE ESTABLISHMENT. HOWEVER, WE BELIEVE THAT MORE THOUGHT AND PLANNING SHOULD BE DEMANDED ON THE PENTAGON'S PART AS TO WHERE THE RESERVE COMPONENTS CAN DO THE JOB AND SAVE CONSIDERABLE MONEY AT THE SAME TIME. MAINTAINING A HUGE STANDING ARMY, NAVY AND AIR FORCE IS TREMENDOUSLY EXPENSIVE AND ANY PORTION OF THAT FORCE WHICH CAN BE ASSUMED BY A RESERVE COMPONENT IS THAT MUCH LESS OF A BURDEN TO THE TAXPAYER. THE PUBLIC MOOD SEEMS TO SUPPORT A BUILD-UP IN OUR DEFENSE ESTABLISHMENT BUT IT WILL NOT TOLERATE NON-ESSENTIAL OR WASTEFUL SPENDING. HOW MUCH EASIER IT WOULD BE TO KEEP A BALANCED STRUCTURE IN DEFENSE IF THE GUARD AND RESERVE WERE TREATED IN A MORE EVEN-HANDED MANNER. THE LARGER THE GUARD AND RESERVE CONTRIBUTION, THE MORE THE SUPPORT FROM THE CITIZENRY.

NRA SUPPORTS THE THESIS THAT THE GUARD AND RESERVE, PROPERLY SUPPORTED, IS THE BEST DEFENSE BUY AVAILABLE TODAY.

THE NAVAL RESERVE ASSOCIATION FULLY SUPPORTS THE SECRETARY OF THE NAVY AND THE CHIEF OF NAVAL OPERATIONS IN THEIR EFFORTS TO ACHIEVE MARITIME SUPERIORITY IN THE SHORTEST POSSIBLE TIME. THE ASSOCIATION ALSO BELIEVES THERE ARE SIGNIFICANT SAVINGS TO BE MADE IN REACHING THIS GOAL BY FOCUSING ON THE MOST EFFECTIVE AND ECONOMICAL WAY TO DO THE JOB.

THE FOLLOWING PROPOSALS FOR PROCUREMENT ADD-ONS TO THE FY 1983 BUDGET ARE DESIGNED TO PROVIDE THE NAVAL RESERVE WITH HARDWARE TO CARRY OUT ITS WARTIME AND PEACETIME ROLES. NRA HAS MADE CERTAIN ASSUMPTIONS WHICH IT HOPES WILL BE CONSIDERED BY THE COMMITTEE, THE CONGRESS AND THE NAVY. THESE INCLUDE THE ASSIGNMENT OF THE TWO NAVAL RESERVE AIR WINGS AS THE 13TH AND/OR 14TH NAVY AIR WINGS FOR THE WARTIME BATTLE GROUPS, THE ACKNOWLEDGEMENT OF THE CRITICAL WARTIME ROLE OF THE RESERVE MARITIME PATROL AIR SQUADRONS AND THE REQUIREMENT FOR A QUICK RESPONSE AIRLIFT FOR THE NAVY FLEET COMMANDERS IN WARTIME AS WELL AS THE ACTIVE AND RESERVE UNIQUE SUPPORT REQUIREMENTS IN PEACETIME. NRA ADDRESSES THESE CONSIDERATIONS IN THE FOLLOWING SECTIONS ON:

- P-3A/B TACTICAL NAVIGATION MODERNIZATION (TAC/NAV MOD)
- RESERVE P-3C PROCUREMENT
- NAVY AIRLIFT MODERNIZATION

- o Tactical Air Wing Modernization
- o Navy Aircraft Procurement Plan

Also included after the body of the testimony are Fact Sheets on the P-3A/B TAC/NAV MOD and Navy Airlift Modernization in order to permit a quick review of those subjects.

P-3A/B Tactical Navigation Modernization (TAC/NAVMOD)

The TAC/NAV/MOD program is a top priority one for the Naval Reserve. The 13 Reserve Maritime Patrol (VP) squadrons constitute 35% of the total Navy Maritime Patrol Aircraft (MPA) Force, over one third of the most effective counter weapon the nation possesses to combat the Soviet submarine threat.

The Navy, through a program of upgrading and modernization, has been able to keep its Maritime Patrol Aircraft up to the state of the art from 1945 when the P-2 Neptune was first introduced to the mid-1990s when the P-3 Orion is scheduled to be phased out.

Through an unfortunate series of events, however, only a few of the Naval Reserve P-3 A/B aircraft have been upgraded with the Tactical/Navigation Modernization package. This package takes a basic P-3A/B aircraft and brings it up to a near baseline P-3C capability. The program adds tactical navigation computer, tactical display, Omega navigation and the vernier AQA-7 sensor. The localization performance and the ability of the modified aircraft to meet attack criteria and effectively deliver weapons are significantly improved. One reliable estimate established the improvement in capability at 75%.

It is very obvious to any qualified analyst that the relatively modest cost addressed in this issue to significantly improve a weapons system, critical to the nation's defense, is money well spent. Conversely, it would be gross negligence on our part to accept the lesser capability of the non-modernized aircraft unless we were to gamble that we did not need a modern weapon system to combat the most formidable Submarine Force in history.

The non-modernized aircraft have, (without a jury rigged navigation system), lost their capability to operate in an open ocean ASW environment. Loran Charlie, which is the land based replacement for the decommissioned Loran

ALPHA SYSTEM, IS NOT SATISFACTORY FOR WORLD-WIDE COVERAGE AND IS, AT BEST, A BACK-UP SYSTEM FOR ASW MISSIONS. LORAN IS ALSO AN EXTERNAL SOURCE SYSTEM AND IS SUBJECT TO SHUTDOWN BY OUTSIDE INTERESTS IN A WARTIME SITUATION.

LAST YEAR BOTH AUTHORIZATION BILLS INCLUDED AN ADD-ON FOR $30.3 MILLION TO STEP UP THE BUY OF THE TAC/NAVMOD KITS FOR RESERVE AIRCRAFT FROM THE ADMINISTRATION'S SUBMISSION OF 15 AIRCRAFT TO 36 P-3A/Bs AS PROPOSED BY NRA. THE ADD-ON WAS DELETED FROM THE AUTHORIZATION BILL BY THE CONFERENCE COMMITTEE AT THE INSISTENCE OF OSD. TO COMPOUND MATTERS, AND BECAUSE OF THE LATE DELETION OF THE ADD-ONS BY THE CONGRESS, NAVY DID NOT INCLUDE ANY MODIFICATIONS IN THE FY 1983 PROPOSED BUDGET.

OF THE 134 P-3A/B AIRCRAFT IN THE NAVAL RESERVE, ONLY 63 HAVE BEEN MODIFIED. THE NAVY ORIGINALLY DID NOT PLAN TO MODIFY ALL RESERVE P-3A/Bs, REASONING THAT THE P-3Bs FROM THE ACTIVE FORCE, ALREADY MODIFIED, WOULD MIGRATE TO THE RESERVE FORCE AND THAT A THREE TO FOUR YEAR PERIOD, WHERE UP TO 29 AIRCRAFT IN THE RESERVE INVENTORY WOULD BE UNMODIFIED, WAS AN ACCEPTABLE RISK. THE NAVY'S DECISION TO LOWER THE PROCUREMENT RATE OF THE P-3C OVER THE NEXT FIVE YEARS MAKES IT EVEN MORE IMPORTANT TO INCORPORATE THE TAC/NAVMOD SYSTEM IN ALL THE RESERVE BIRDS.

THE NAVY PROPOSAL TO LOWER THE P-3C PROCUREMENT FROM 12/YEAR TO SIX OR LESS PER YEAR IS UNFORTUNATE OVER THE LONG HAUL FOR SEVERAL REASONS: (1) IN ORDER TO KEEP FROM HAVING TO DISESTABLISH VP SQUADRONS COMMENCING IN THE EARLY 1990s A PROCUREMENT INCREASE TO 20 P-3Cs WOULD BE REQUIRED, (2) AN INCREASE TO THE 20 AIRCRAFT/YEAR WOULD RESULT IN THE SAVINGS OF APPOXIMATELY 10% IN COSTS OVER THE PROJECTED 12/YEAR SCHEDULE, THE DECREASE WILL ACTUALLY INCREASE THE UNIT COST, (3) NO FOLLOW-ON VP AIRCRAFT IS YET ON THE R&D BOARD, AND (4) SINCE THE PRESENT VP FORCE DOES NOT MEET PROJECTED WARTIME REQUIREMENTS A CUTBACK IN AN ALREADY INADEQUATE PROCUREMENT PLAN SERIOUSLY COMPOUNDS THE PROBLEMS OF FULFILLING THE REQUIRED COMMITMENT IN THE OUT YEARS. (SEE RESERVE P-3C PROCUREMENT FOR RELATED SUBJECT)

RECOMMENDATION:

NRA PROPOSES, THEREFORE, THAT THE CONGRESS FUND, ON A MULTI-YEAR BASIS, THE TAC/NAVMOD TO THE 71 REMAINING NAVAL RESERVE P-3A/B AIRCRAFT ON AN EXPE-

DITIOUS BASIS, (FY83 AND FY84), THUS PROVIDING THE NATION WITH THE MOST CAPABLE WEAPON SYSTEM AVAILABLE IN THE SHORT TERM AT A VERY REASONABLE COST TO THE TAXPAYER.

RESERVE P-3A/B TAC/NAVMOD

(COST IN $ MILLIONS, FY 83 DOLLARS)

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84
KITS PROCURED	14	0	34	15		
PROCUREMENT REQUIRED					36	35
(COST)*					(50.4)	(49.0)
UNMODIFIED A/C	120	120	86	71	35	-0-

* BASED ON MULTI-YEAR PROCUREMENT. (NAVY INSTALLATION CAPABILITY IS 36/YEAR).

RESERVE P-3C PROCUREMENT

THE DEFENSE DECISION TO REDUCE THE PLANNED BUY OF P-3Cs FROM 12 IN FISCAL YEAR 1983 AND THE OUT YEARS TO SIX (6) AIRCRAFT IN FY 1983 AND FIVE (5) EACH SUCCEEDING YEAR IN THE FIVE YEAR DEFENSE PLAN (FYDP) YEARS HAS MANY LONG RANGE IMPLICATIONS.

ALL P-3As, P-3Bs AND A LARGE NUMBER OF P-3Cs WILL REACH THE END OF THEIR EXTENDED SERVICE LIFE IN THE 1990s. BASED UPON A PROCUREMENT RATE OF 12 P-3Cs/YEAR, THE FIRST RESERVE VP SQUADRON WOULD HAVE TO BE DISESTABLISHED IN THE EARLY 1990s, AND BY THE LATE 1990s ALL OF THE RESERVE UNITS WOULD BE OUT OF BUSINESS. THE RESERVE CONTRIBUTION TO THE MARITIME PATROL AIRCRAFT (MPA) FORCE AMOUNTS TO 35% OF THE TOTAL ASSETS WITHIN THAT FORCE. THE PROCUREMENT OF 20 AIRCRAFT EACH YEAR, COMMENCING IN FY 1983 IS REQUIRED TO KEEP THE FORCE INTACT THROUGH THE CENTURY. SINCE THERE IS NO REPLACEMENT AIRCRAFT ON THE DRAWING BOARD FOR THE P-3C IT IS VERY IMPORTANT THAT THE PROCUREMENT PLAN FOR THIS AIRCRAFT BE MAINTAINED TO MEET THE THREAT FOR THE FORSEEABLE FUTURE.

THERE IS GENERAL AGREEMENT THAT THE MOST DANGEROUS THREAT TO THE SECURITY OF THE UNITED STATES IS THE SOVIET SUBMARINE FORCE, BOTH THE ATTACK AND THE MISSILE FIRING GROUPS. THE THREAT IS GREAT AT THIS TIME WITH THE SOVIET SUBMARINE FORCE GROWING MORE IN NUMBERS AND SOPHISTICATION EACH YEAR. TO BACK OFF A PLAN WHICH IS INADEQUATE TO START WITH, AND GO WITH ONE WHICH ACCEPTS A CUT

IN THE AIR ANTI-SUBMARINE FORCE WHEN THE ENEMY IS GROWING EVEN MORE POWERFUL, IS TO ACCEPT INFERIORITY.

THE P-3C, BECAUSE OF ITS CONTINUALLY IMPROVED CAPABILITY, DUE TO REGULAR UPDATING WITH STATE OF THE ART IMPROVEMENTS, IS THE PRIMARY ANTI-SUBMARINE WARFARE (ASW) WEAPONS SYSTEM IN THE INVENTORY. IT IS OBVIOUS THAT, WITH THE CONTINUED IMPROVEMENT IN THE SOVIET SUBMARINE TECHNOLOGY, OUR WEAPONS SYSTEMS MUST BE CONTINUALLY MODIFIED AND UPGRADED TO EFFECTIVELY COUNTER THE SOVIET THREAT. SINCE THE P-3C UPDATE III IS THE MOST MODERN AIR ASW WEAPONS SYSTEM IN EXISTENCE, IT NEEDS TO BE PROCURED AT WHATEVER PACE IS NECESSARY TO MEET THIS THREAT.

INCLUDED IN THE NAVAL RESERVE MISSION IS THE REQUIREMENT TO PROVIDE THREE FULL CREWS TO EACH OF THE 24 ACTIVE FORCE VP SQUADRONS. MOST OF THE ACTIVE UNITS FLY ONE OF THE VERSIONS OF THE P-3C. WHILE SOME OF THE COCKPIT TRAINING CAN BE DONE USING RESERVE P-3A/B PLANES, THE SENSOR AND TACCO POSITIONS ARE VERY MUCH DIFFERENT IN THE RESERVE AIRCRAFT THAN IN THE P-3Cs USED IN THE FLEET. THE LOGICAL WAY TO RESOLVE THIS IS TO EITHER SUPPLY THE NAVAL RESERVE WITH P-3C AIRCRAFT WITH WHICH TO TRAIN AND MAINTAIN THE SKILLS OF THE AUGUMENTING CREWS OR TO ADD THREE CREWS TO EACH ACTIVE FORCE SQUADRON TO BRING THOSE SQUADRONS UP TO WARTIME COMPLEMENT. THE LATTER OPTION WOULD BE VERY EXPENSIVE WHEN COMPARED TO THE FIRST ALTERNATIVE.

IT IS ESTIMATED THAT THREE DETACHMENTS OF THREE P-3C AIRCRAFT EACH, COLLOCATED AT FLEET P-3C SITES, COULD PROVIDE THE TRAINING NECESSARY TO TRAIN AND MAINTAIN THE CURRENCY IN THE P-3C AIRCRAFT OF THE 72 AUGMENTATION CREWS. SUCH TRAINING WOULD ACCOMPLISH THE FOLLOWING:

(1) RETAIN THE CURRENCY OF FLEET PERSONNEL WHO LEAVE THE ACTIVE FORCE. THIS WOULD ALSO CANCEL OUT MUCH OF THE RETROGRESSIVE TRAINING WHEREIN FLEET PERSONNEL HAVE TO TRAIN DOWN TO THE P-3A/B FROM THE P-3C. THIS PLAN WOULD PRECLUDE DOUBLE TRAINING THE SAME INDIVIDUALS, THUS RETAINING THE DOLLAR INVESTMENT OF FLEET TRAINING AND EXPERIENCE.

(2) UTILIZE COMMON ENGINE/SUPPLY SUPPORT SITES THEREBY ELIMINATING THE COST OF SUPPORTING A NEW SITE IN THE NEAR FUTURE.

(3) Provide an additional pool of P-3C maintenance talent from among the TARS and Selected Reservists in the training unit.

(4) Prepare the Reserve community for the transition into an all P-3C force.

(5) Maintain a higher and therefore more economical production rate of the P-3C toward the goal of an all P-3C MPA force.

The Reserve P-3C detachment would require an estimated additional seven officers and 93 enlisted members per three plane site. It is envisioned that the P-3C update III aircraft procured under this plan would go into the active force with the Naval Reserve receiving P-3C aircraft from the fleet squadrons on a one for one basis.

Recommendation:

The Naval Reserve Association recommends the procurement of an additional three P-3C update III aircraft each year for three years to provide augmentation training to Reserve P-3C fleet augmentation crews at an additional cost of $34.5 Million for each aircraft, a total additional cost over the budget submission of $103.5 Million each year in FY 1983 dollars. These aircraft would be assigned to the fleet on a one for one exchange of fleet P-3Cs to the Naval Reserve VP community. Additionally, seven TAR officers and 93 enlisted TAR billets should be authorized and funded over budget submissions to administer the P-3C Reserve detachment.

Navy Airlift Modernization

The modernization of the Navy's airlift capability seems to be the longest and most persistent problem being addressed by the NRA today.

Ever since the late 1960s there has been a running battle being waged between Navy and OSD as to what Navy's requirements are in intra-theater airlift. The problem seemed to be solved when the purchase of C-9B aircraft was approved by the Congress in FY 73. Altogether, 14 C-9Bs were purchased for Navy and Marine use, OSD then decided to consolidate all airlift under the Military Airlift Command (MAC). The consolidation decision by OSD accomodated Navy airlift requirements using "free" excess flying hours in the MAC inventory

WITHOUT HAVING TO PURCHASE ADDITIONAL AIRCRAFT. IN OTHER WORDS THE SUPPORT WAS SUPPOSED TO BE FREE. OBVIOUSLY THE FREE RIDE NEVER HAPPENED BUT OSD, UP UNTIL RECENTLY, WOULD NOT BACK OFF ITS ORIGINAL STAND DESPITE THE FACT THAT ALL THE ASSUMPTIONS UPON WHICH THE DECISION WAS BASED WERE INVALID.

THE AIR FORCE RESPONDED TO THE DECISION TO CONSOLIDATE BY STATING THAT ADDITIONAL ASSETS (AIRCRAFT AND FLIGHT HOURS) WERE NECESSARY TO ABSORB THE ADDITIONAL NAVY REQUIREMENTS. A TEST OF THE MAC CAPABILITY TO ASSUME THE NAVAL RESERVE WEEKEND AIRLIFT REQUIREMENTS, IN JULY-AUGUST OF 1977, WAS A RESOUNDING FAILURE. THE SERVICE WAS POOR AND THE COST TWICE THAT OF BETTER SERVICE WITH C-9Bs.

THE CONGRESS IN ITS HEARINGS ON THE MATTER HAS REJECTED THE CONSOLIDATION EFFORT FOR THE LAST SIX YEARS AND, IN SPITE OF OSD PROTESTS, HAS VOTED TO ADD C-9Bs TO THE BUDGET IN TWO OF THE PAST FOUR YEARS, ALBEIT IN SMALL NUMBERS BECAUSE OF THE OSD OPPOSITION.

AS PART OF THE OSD PLAN TO CONSOLIDATE THE AIRLIFT EFFORT AN ATTEMPT WAS MADE FOR FOUR YEARS TO GET RID OF THE C-118s WHICH THE NAVAL RESERVE WAS USING TO HANDLE ITS OWN AND SOME OF THE FLEET REQUIREMENTS. EACH YEAR THE CONGRESS RESTORED THE OLD RELIABLE C-118s TO THE FORCE UNTIL TWO YEARS AGO WHEN OSD FINALLY ADOPTED A FIVE YEAR PHASEOUT PLAN FOR THAT AIRCRAFT. NRA WARNED AT THAT TIME THAT THERE SHOULD BE NO FURTHER EXTENSION OF THE C-118s BECAUSE THEY WERE FAST REACHING THE POINT OF DIMINISHING RETURNS.

AS A RESULT OF THE PHASEOUT PLAN ONE VR UNIT AT NEW ORLEANS HAS ALREADY BEEN DISESTABLISHED. REPLACEMENT AIRCRAFT FOR THE C-118s HAVE NOT BEEN FORTHCOMING, CONSEQUENTLY, MORE UNITS AT DETROIT, MEMPHIS, ATLANTA, WHIDBY ISLAND, GLENVIEW AND WILLOW GROVE WERE SCHEDULED TO BE DISESTABLISHED IN THE PERIOD FY 1982 THROUGH FY 1985. ONCE LOST, THE TREMENDOUS TALENT AND EXPERIENCE AVAILABLE IN A SQUADRON WOULD BE VERY DIFFICULT TO RECOVER. THE BUILDING OR REBUILDING OF A SQUADRON IS A RELATIVELY SLOW PROCESS. APPARENTLY, SECRETARY LEHMAN CLEARLY UNDERSTANDS THIS PROBLEM. HE ISSUED A MESSAGE THAT HELD ALL DISESTABLISHMENTS IN ABEYANCE PENDING RESOLUTION OF THE RESERVE AIRLIFT ISSUE. THE SECRETARY'S ACTION SAVED VR-52 IN DETROIT FROM IMMEDIATE DISESTABLISHMENT AND PUMPED NEW LIFE INTO THE UNIT. BOTH SECRETARY LEHMAN AND THE CNO, ADMIRAL HAYWARD, HAVE TAKEN A PERSONAL INTEREST IN FINDING AN IMMEDIATE SOLUTION TO THE C-118 REPLACEMENT PROGRAM. THAT INTEREST

AND LEADERSHIP IS VITAL TO THE RESOLUTION OF THE PROBLEM AND IS SINCERELY APPRECIATED. BEFORE SPECIFIC RECOMMENDATIONS ARE MADE, MORE HISTORY AND BACKGROUND INFORMATION ARE APPROPRIATE.

THE QUESTION IS FREQUENTLY ASKED, "WHY DOES THE NAVY NEED ITS OWN AIRLINE?" FIRST OF ALL, TITLE 10 U.S.C. 5012(B) DIRECTS THAT THERE BE NAVY ORGANIC, "AIR TRANSPORT ESSENTIAL FOR NAVAL OPERATION." THE CHART TITLED, "NAVY ORGANIC LOGISTICS AIRLIFT REQUIREMENTS", LOCATED AT THE END OF THIS TESTIMONY SETS FORTH THE OVERALL REQUIREMENTS FOR THE FLEET, THE MARINES AND THE NAVAL RESERVE. THE C-9B AIRCRAFT WAS ORIGINALLY SELECTED FROM AMONG A SIZEABLE NUMBER OF CANDIDATES AS THE BEST AIRCRAFT AVAILABLE TO ACCOMPLISH THE MISSION OF SUPPORT TO THE FLEET COMMANDERS. THERE IS NOTHING THAT IS SO RESPONSIVE TO THE NAVY UNIQUE AIRLIFT REQUIREMENTS OF SHORT LEAD TIME, LOW VOLUME, HIGH FREQUENCY OF DEMANDS TO A MULTIPLICITY OF MOSTLY UNPREDICTABLE FLEET LOCATIONS, AS AN ORGANIC AIRLIFT. THE AIR FORCE AGREED WITH THE ABOVE ASSERTION DURING THE DEFENSE TACTICAL AIRLIFT MODERNIZATION (DODTAM) STUDY CONDUCTED BY OSD IN 1978. THAT STUDY ALSO CONFIRMED THE NEED FOR 37 ADDITIONAL C-9Bs IN ORDER TO SATISFY THE NAVY'S REQUIREMENTS. A MODEST NAVY ORGANIC AIRLIFT CAPABILITY WAS DETERMINED TO BE THE ONLY METHOD OF PROVIDING THE REQUISITE RESPONSE.

ONCE THE REQUIREMENT WAS VALIDATED, THE NEXT STEP WAS TO FIND THE MOST EFFICIENT AND COST EFFECTIVE MANNER OF PROVIDING THE SERVICE. NRA BELIEVES THE AIRLIFT SYSTEM NOW IN PLACE IN THE NAVY PROVIDES THE BEST OF ALL POSSIBLE WORLDS. NAVAL RESERVISTS FLY ALL THE NAVAL LOGISTICS AIRLIFT SUPPORT IN THE CONTINENTAL UNITED STATES (CONUS) AND SOME INTRA THEATRE SUPPORT. THIS HAS BEEN EXPANDED TO INCLUDE A COMMITMENT TO MAINTAIN AN AIRCRAFT AT CERTAIN TIMES IN SUPPORT OF THE SIXTH FLEET IN THE MEDITERRANEAN. THE NAVAL RESERVE CAN HANDLE THIS DEPLOYMENT BY SCHEDULING RESERVISTS ON A HEEL AND TOE OR BACK TO BACK TWO WEEK DEPLOYMENTS AS IS ALSO BEING DONE IN THE VP COMMUNITY AT SEVERAL LOCATIONS.

EACH RESERVE VR SQUADRON IS LARGE ENOUGH SO THAT THE SELECTED AIR RESERVISTS CAN FLY ALL THE SCHEDULED MISSIONS IN PEACETIME AND ARE IMMEDIATELY AVAILABLE FOR A SURGE TO TRIPLE THE PEACETIME FLIGHT SCHEDULE IN WARTIME OR OTHER NATIONAL EMERGENCY. THE CREWS, WHICH ARE ALL INACTIVE RESERVISTS EXCEPT FOR A FEW TARS (TRAINING AND ADMINISTRATION OF RESERVE), ARE BASICALLY PAID FOR ONLY THE TIME THEY ARE FLYING. THESE AIRCRAFT, WHICH SATISFY THE WARTIME REQUIREMENT TO SUP-

PORT THE FLEET COMMANDERS, CAN BE EFFECTIVELY USED IN PEACETIME TO SUPPORT FLEET AND RESERVE NEEDS NOT AMENABLE TO MAC CAPABILITIES. THIS ORGANIC SUPPORT ACCOUNTS FOR ONLY 20% OF THE NAVY'S AIRLIFT REQUIREMENTS, THE REST IS HANDLED BY MAC AND CIVILIAN COMMERCIAL ASSETS. THE PEACETIME USE OF THE AIRLIFT ASSETS BY THE NAVAL RESERVE IS ESSENTIAL TO THE READINESS AND PERSONNEL STABILITY OF THE NAVAL RESERVE. DUE TO THE CONSOLIDATION OF MOST OF THE RESERVE AIR ACTIVITIES AT USN LOCATIONS, (OUT OF THE HIGH POPULATION AREAS), AND THE NEED TO PROVIDE HANDS ON TRAINING TO SURFACE RESERVISTS, THE IMPORTANCE OF A RESPONSIVE AIRLIFT IS OBVIOUS IF WE ARE TO EXPAND OR EVEN RETAIN THE PRESENT NAVAL RESERVE FORCE.

THIS YEAR HAS NOT ONLY SEEN THE SECRETARY OF THE NAVY, JOHN LEHMAN, AND THE CHIEF OF NAVAL OPERATIONS, ADMIRAL HAYWARD, GIVE HIGH PRIORITY TO REPLACING THE AGED C-118S IN THE NAVAL RESERVE, BUT THE OSD RESISTANCE TO THE ACQUISITION OF A REPLACEMENT AIRCRAFT APPEARS TO HAVE SWITCHED TO A SUPPORTIVE POSITION. NRA HOPES THAT, AT LONG LAST, THE NAVY LOGISTICS AIRLIFT CRISIS CAN BE RESOLVED AND THE GOAL OF IMPROVING THE COMBAT READINESS STATUS OF NAVY ACTIVE AND RESERVE UNITS/INDIVIDUALS CAN BE REALIZED.

NRA HAS BACKED OFF ITS STRONG RECOMMENDATIONS OF THE PAST EIGHT YEARS THAT ALL OF THE NAVY'S ORGANIC LOGISTICS AIRLIFT REQUIREMENTS BE FILLED BY NEW C-9B AIRCRAFT. THE AVAILABILITY OF USED DC-9S ON THE MARKET HAS PROVIDED A VERY ATTRACTIVE AND LOGICAL ALTERNATIVE TO NEW AIRCRAFT BECAUSE OF THE IMMEDIATE AVAILABILITY AND VERY ATTRACTIVE COST OF THE USED PLANES. THERE IS A SACRIFICE IN CAPABILITY AND LONGEVITY BETWEEN THE USED AIRCRAFT AVAILABLE FOR LEASE/ PURCHASE AND NEW C-9BS. THE C-9B HAS BETTER RANGE AND FLEXIBILITY WITH ITS EXTRA FUEL CAPACITY AND CARGO CONVERTIBILITY, CONSEQUENTLY, NRA HAS RETAINED, IN ITS BUDGET REQUEST, ELEVEN C-9BS IN FISCAL YEARS 1983 - 1985 TO FILL OUT THE MINIMUM WARTIME FLEET AND MARINE REQUIREMENTS. THE USED DC-9S INCLUDED IN NRAS PROCUREMENT PLAN CAN BE MODIFIED BY THE NAVY AFTER PURCHASE IF IT IS DEEMED APPROPRIATE. THE EXTENT OF THE MODIFICATION/S OF THE USED DC-9S WOULD DEPEND ON THE CONFIGURATION/S REQUIRED BY THE NAVY AND THE SERIES OF AIRCRAFT SELECTED FOR PROCUREMENT. IT IS EMPHASIZED HOWEVER, THAT THE USED AIRCRAFT PROPOSED HEREIN WOULD HAVE A NAVY SERVICE LIFE OF FROM 17 TO 30 YEARS BASED UPON THE SCHEDULED UTILIZATION OF 120 HRS/MONTH AND A SERVICE LIFE OF 75,000 HOURS.

THE BUY AND LEASE CHARTS FOR USED DC-9s ARE EXTRACTED FROM THE BEST ESTIMATES AVAILABLE AT THIS TIME. THE USED AIRCRAFT MARKET IS A FLUID ONE. A DISTINCT VARIABLE IS THE SERIES AND MODEL AIRCRAFT WHICH THE NAVY SELECTS AS ITS CHOICE.

NRA HAS STATED ITS RECOMMENDATIONS BASED ON AN UNSOLICITED OFFER TO SELL OR LEASE BY A SPECIFIC AIRCRAFT USER. THE AIRCRAFT BASICALLY IS A DC-9-31 WITH 35,000 HOURS. THE PRICE INCLUDES CONSIDERABLE SPARES AND SUPPORT EQUIPMENT ADEQUATE FOR 12 PLANES - AND - THE PRICE IS NEGOTIABLE AT THIS TIME. NRA BELIEVES THAT THE TIME WILL NEVER BE BETTER FOR PURCHASING USED AIRLIFT AIRCRAFT. OTHER DC-9s OF OLDER VINTAGE AND LESSER CAPABILITY ARE AVAILABLE FOR COMMENSURATELY LOWER PRICES. NRA ANTICIPATES THAT THE SPECIFIC COST FIGURES WILL BE AVAILABLE BY CONGRESSIONAL MARKUP TIME.

THE NAVAL RESERVE ASSOCIATION CALLS FOR THE ADOPTION OF A PLAN WHICH ACCOMPLISHES TWO GOALS - (1) THAT OF SUPPLYING THE WARTIME FLEET COMMANDERS WITH A QUICK RESPONSE LOGISTIC AIRLIFT SUPPORT WITHIN THE NEXT THREE YEARS, AND (2) PROVIDING AN IMMEDIATE FIX FOR THE CURRENT PAUCITY OF NAVY LOGISTICS AIRLIFT ASSETS BY REPLACING THE AGED AND AILING C-118s WITH USED DC-9s AVAILABLE FOR LEASE FROM A COMMERCIAL SOURCE FOR APPROXIMATELY $50.0 MILLION, ABOUT $31.0 MILLION ABOVE THE BUDGET REQUEST.

AN ALTERNATIVE TO THE LEASE PLAN WOULD BE TO PURCHASE THOSE USED C-9s OUTRIGHT. PROCUREMENT COSTS WOULD BE APPROXIMATELY $75.0 MILLION FOR THE TWELVE AIRCRAFT. ADDITIONALLY, THE MAINTENANCE CONTRACT WOULD RUN APPROXIMATELY $9.0 MILLION EACH YEAR. REGARDLESS OF WHETHER SUCH AIRCRAFT WERE LEASED OR PURCHASED THERE WOULD ALSO BE SOME SITE SUPPORT START UP COST. THE EXPECTED COSTS OF THE TWELVE AIRCRAFT UNDER THE TWO ALTERNATE PLANS APPEAR BELOW. THE CHARTS ARE BASED UPON A SPECIFIC OFFER TO LEASE OR SELL USED DC-9-31 AIRCRAFT. THE DECISION TO LEASE OR BUY A DIFFERENT SERIES OF AIRCRAFT COULD CHANGE THE AMOUNTS SHOWN CONSIDERABLY. OFFSETS SHOWN IN FY 83 ARE $16.2 MILLION IN PROCUREMENT FUNDS INTENDED FOR THE PURCHASE OF TWO USED DC-9s, AND $4.1 MILLION IN O&MNR WHICH CONSISTS OF HALF YEAR FUNDING FOR THE C-118 OVERHAULS AND FLIGHT HOURS. THE CHART ALSO ASSUMES THAT THE NAVY ENTERED INTO A LEASE FOR FOUR (4) USED DC-9s IN FY 1982 WHICH IS THE INTENTION AT THIS WRITING. THE THIRD CHART SHOWS THE COSTS OF PROCURING THE REMAINING 11 NEW C-9Bs NEEDED TO FILL OUT THE FLEET AND MARINE

WARTIME REQUIREMENTS, FOUR (4) EACH IN FISCAL YEARS 1983 AND 1984 AND THREE (3) IN FY 1985: (ALL FIGURES ARE CONSTANT 83 DOLLARS IN THE MILLIONS)

BUY Used DC-9s (8/FY 83, 4/FY 84)

Fiscal Year	FY-83	FY-84	FY-85
Flyaway Cost	(8) 50.0	(4) 25.0	(0) -
Site Support*	8.0	2.5	-
Spares (Initial)*	16.0	8.0	-
O&MNR (POL)	14.3	19.0	19.0
O&MNR (Maintenance)	4.7	6.2	6.2
O&MNR (Training)**	.8	-	-
Sub Total	93.8	60.7	25.2
Less FY 83 Budget Procurement	(16.2)		
Less FY 83 C-118 O&MNR (1/2 Year)	(4.1)		
Total	73.5		

(Procurement 57.8 O&MNR 15.7)

*Costs based upon a known offer of used DC-9-31 aircraft which includes much site support and spare parts.
**Training costs for 64 pilots and 22 enlisted crew.

LEASE 12 Used DC-9s

Fiscal Year	FY-83	FY-84	FY-85
Lease (O&MNR)	12.0	12.0	12.0
Site Support*	11.4	-	-
Spares (Initial)*	21.0	-	-
O&MNR (POL)	14.3	14.3	14.3
O&MNR (Maintenance)	4.7	4.7	4.7
O&MNR (Training)**	.8	-	-
Sub Total	64.2	31.0	31.0
Less FY 83 Budget Procurement	(16.2)		
Less FY 83 C-118 O&MNR	(4.1)		
Total	43.9		

(Procurement 16.2 O&MNR 27.7)

BUY C-9Bs

Fiscal Year	FY-83	FY-84	FY-85	83-85
C-9B	4	4	3	11
Flyaway Cost	105.45	105.45	79.0	289.90
Site Support	6.8 (2)	6.8 (2)	3.4 (1)	17.0
Initial Spares	7.5	7.5	5.5	20.5
Total	119.75	119.75	87.9	327.4

SUMMARY

THE UNIQUE AIRLIFT REQUIREMENTS OF THE NAVY ARE BEST SATISFIED BY A NAVY ORGANIC AIRLIFT CAPABILITY. THIS HAS BEEN VERIFIED THROUGH CONGRESSIONAL HEARINGS AND BUDGET ACTIONS, THROUGH NAVY STUDIES, THROUGH AN OSD STUDY (DODTAM) AND THROUGH PUBLIC LAW 10 USC 5012(B). THE PRESENT C-118S HAVE BEEN FLYING OVER 30 YEARS AND ARE GIVING UP FASTER EVEN THAN PLANNED WHICH, UNLESS SOMETHING IS DONE EXPEDITIOUSLY, WILL CAUSE A LOT OF HIGHLY TRAINED RESERVISTS TO GO HOME FOR LACK OF BILLETS. THE CASE FOR THE C-9B TO SERVE THE NEEDS OF THE FLEET COMMANDERS IN WARTIME IS WELL DOCUMENTED AS BEING THE BEST OF THE OPTIONS AVAILABLE.

THE C-B HAS THE BEST DISPATCH RELIABILITY RATE OF ANY OPERATIONAL AIRCRAFT IN THE MILITARY INVENTORY (97.0%+ IN CONUS). IT IS FLOWN BY NAVAL RESERVISTS AND IS MANNED TO TRIPLE ITS FLIGHT HOUR SCHEDULE FOR WARTIME SURGE REQUIREMENTS. NRA BELIEVES THAT THERE IS NO MORE COST EFFECTIVE OPERATION IN THE DEFENSE ESTABLISHMENT TODAY.

THE NAVY HAS INITIATED ACTION TO LEASE USED C-9 AIRCRAFT COMMENCING IN FY 1982. AN ENDORSEMENT OF THE INITIATIVE AS WELL AS THE AUTHORIZATION AND FUNDING FOR EIGHT (8) USED DC-9S AND FOUR (4) C-9BS IN FY 1983 BY THE CONGRESS IS NECESSARY TO FULFILL THE NAVY'S ORGANIC LOGISTICS AIRLIFT REQUIREMENTS. NOW IS THE TIME TO NEGOTIATE FOR THE BEST PRICE ON USED AIRCRAFT. THE NEED IS ALSO PRESENT TO COMMIT TO A BUY OF NEW C-9BS IN FY 1983 TO KEEP THE PRODUCTION LINE OPEN. THIS WILL ENABLE THE PROCUREMENT OF C-9BS TO CONTINUE UNTIL THE FLEET WARTIME REQUIREMENT IS REACHED IN FY 1985.

NRA BELIEVES ITS PROPOSED LOGISTICS AIRLIFT PACKAGE IS THE MOST REASONABLE ALTERNATIVE AVAILABLE TO SOLVE BOTH THE REQUIREMENT FOR ADDITIONAL AIRLIFT ASSETS IN THE NAVY AND TO ACCOMPLISH IT IN THE MOST ECONOMICAL MANNER.

RECOMMENDATION:

THAT THE CONGRESS FUND THE ADDITIONAL COSTS OF $73.5 MILLION FOR EIGHT (8) USED DC-9 AIRCRAFT IN FY 83 AND $119.75 MILLION FOR FOUR (4) NEW C-9BS.

TACTICAL AIR WING MODERNIZATION

"...WE WILL BEGIN A SHIFT THIS YEAR FROM A VERTICAL INTEGRATION OF OUR AIRCRAFT -- THE PRACTICE OF PUTTING OLDER AIRCRAFT MODELS INTO THE RESERVES AS WE PHASE NEWER ONES INTO THE FLEET -- TOWARD HORIZONTAL INTEGRATIO...WE SHALL ESTABLISH RESERVE SQUADRONS FOR VIRTUALLY ALL OF OUR FRONT LINE FLEET AIRCRAFT..." WITH THESE WORDS THE SECRETARY OF THE NAVY, THE HONORABLE JOHN F. LEHMAN, IN HIS FY 1983 POSTURE STATEMENT SET THE STAGE FOR MODERNIZING THE NAVAL AIR RESERVE. FOLLOWING SECNAV'S LEAD, THE CHIEF OF NAVAL OPERATIONS, ADMIRAL THOMAS B. HAYWARD, USN, NOTED IN HIS OWN FY 1983 POSTURE STATEMENT THAT, "...SECRETARY LEHMAN AND I ARE BOTH CAREFULLY REVIEWING THE NAVAL AIR RESERVE PROGRAM WITH THE FULL INTENTION OF MODERNIZING THE TACTICAL AIR SQUADRONS AS EARLY AS POSSIBLE WITH THE INTRODUCTION OF THE F/A-18 AS WELL AS THE A6E..."

IT WAS CERTAINLY HEARTENING AND ENCOURAGING, IN LIGHT OF THE NRA'S CONTINUED PUSH FOR MODERNIZATION OF THE NAVAL RESERVE, TO HEAR THE TWO NAVAL LEADERS COME OUT LOUD AND CLEAR TO UPGRADE THE NAVAL RESERVE TACTICAL AIR (TACAIR) COMMUNITY.

THE NAVAL RESERVE ASSOCIATION APPRECIATES THE IMPETUS GIVEN THE MODERNIZATION PROGRAM BY SECRETARY LEHMAN AND ADMIRAL HAYWARD. ALTHOUGH THE RESULTS OF THE INITIATIVE TAKEN BY THESE TWO LEADERS WILL NOT COMMENCE TO BE SEEN UNTIL FY 1984, NRA BELIEVES THAT THE PROGRAM CAN BE KICKED OFF IN FY 1983 IF THE CONGRESS CAN BE CONVINCED TO DO SO. IT IS THE INTENT OF THE ASSOCIATION TO ATTEMPT TO DO JUST THAT.

SINCE THE END OF WORLD WAR II THE FLOW OF AIRCRAFT HAS BEEN ALMOST EXCLUSIVELY FROM OLDER USN ASSETS WHICH WERE OF NO FURTHER USE TO THE ACTIVE FORCE. THEY CONSISTED OF AIRCRAFT IN EXCESS OF THE NEEDS OF ACTIVE FORCE REQUIREMENTS EITHER FOR THE PRESENT OR FUTURE TIME FRAME. AS THE ACTIVES RECEIVED NEW AIRCRAFT THE OLDER MODELS MIGRATED TO THE NAVAL AIR RESERVE, OFTEN AS AN AFTERTHOUGHT, IN LIEU OF PUTTING THE AIRCRAFT INTO MOTHBALLS OR SALVAGE.

AS THE DEFENSE BUDGET DROPPED OFF IN PRIORITY, THE AIRCRAFT INVENTORY BECAME CRITICAL FOR THE ACTIVE FORCE WITH AN EVEN GREATER IMPACT ON THE RESERVE SQUADRONS. EVENTUALLY THE DESIRED "MIRROR IMAGE" OF THE RESERVE UNITS CHANGED TO ONE OF HARDLY ANY COMPATABILITY WITH THE ACTIVE SQUADRONS. ON SEVERAL OCCASIONS, THE SITUATION BECAME SO CRITICAL IN THE ACTIVE FORCE THAT THE OLD RESERVE AIRCRAFT HAD TO BE TRANSFERRED BACK INTO THE ACTIVES TO FILL THE VOIDS CAUSED BY COMBAT AND OTHER ATTRITION LOSSES WELL IN EXCESS OF NAVAL AIRCRAFT PROCUREMENT GAINS.

BACK IN THE EARLY 70'S (1973-1974) THE TOTAL FORCE STUDY RECOMMENDED, INTER ALIA, THAT A RESERVE AIR WING BE MAINTAINED AT A CURRENCY WHEREBY IT COULD BE DEPLOYED EXPEDITIOUSLY ABOARD A DESIGNATED CARRIER IN THE EVENT OF A NATIONAL EMERGENCY. FOR SOME REASON A FEW OF THE OSD OFFICIALS COULD NOT BELIEVE THAT A RESERVE AIR WING COULD BE READY TO GO TO SEA ABOARD A CARRIER WITHOUT MANY MONTHS OF WORKUP. AN OPERATIONAL READINESS EXERCISE (ORE) OF AIR WING THIRTY WAS FINALLY CONDUCTED ABOARD RANGER IN NOVEMBER

1976 AND RESULTED IN A HIGHLY PROFESSIONAL PERFORMANCE BY THE RESERVE AIR WING. NOT ONLY COULD THE RESERVE UNIT MEET THE CHALLENGE, BUT IT COULD DO IT FASTER AND WITH A MUCH HIGHER PROFESSIONAL CAPABILITY THAN THE ACTIVE AIR WINGS WHICH WERE NOT AT SEA OR IN A READY-FOR-DEPLOYMENT STATUS. AIR WING TWENTY FOLLOWED IN NOVEMBER 1978 ABOARD INDEPENDENCE WITH ANOTHER OUTSTANDING PERFORMANCE IN ITS ORE. THE TWO EXERCISES PROVED THAT THE CONCEPT OF RESERVE AIR WINGS ASSIGNED TO ACTIVE FORCE CARRIERS FOR EARLY DEPLOYMENT IS A VIABLE ONE. THE EXTENSIVE EXPERIENCE LEVEL OF THE RESERVE FLIGHT AND MAINTENANCE CREWS IS THE KEY TO SUCH A HIGH COMBAT READINESS STATUS.

THE PROBLEM THAT HAS DEVELOPED IS THE INCOMPATABILITY OF THE CARRIER WITH THE RESERVE AIR WING. THE AIRCRAFT MIX IN THE RESERVE TACAIR COMMUNITY CANNOT BE SUPPORTED BY THE CARRIER IN THE PRESENT CONFIGURATION. ALTHOUGH THE AIR WING COULD BE READY FOR COMBAT OPERATIONS WITHIN A FEW WEEKS AFTER RECEIVING ORDERS TO DO SO, IT COULD NOT BE SUPPORTED FOR SUSTAINED OPERATIONS OF MORE THAN A FEW WEEKS BY THE CARRIER. EVEN FOR THAT SHORT PERIOD OF TIME PORTABLE OR JURY RIGGED EQUIPMENT WOULD HAVE TO BE USED. IT IS ESTIMATED THAT IT WOULD TAKE UP TO SIX MONTHS TO MAKE NECESSARY MODIFICATIONS TO THE SHIP IN ORDER TO PROVIDE MAINTENANCE AND SUPPLY SUPPORT FOR THE RESERVE AIR WING. PACK-UP OR WAR-RISK KITS WERE INCLUDED IN THE EARLY BUDGET ITERATION A FEW YEARS AGO, BUT FELL OUT IN THE LATER GOING.

THE NAVY PROPOSAL TO INCREASE ITS STRENGTH TO 600 SHIPS, INCLUDING UP TO 15 BATTLE GROUPS, IS SUPPORTED BY THE NAVAL RESERVE ASSOCIATION. THE PROPOSED BUILDUP IN NAVAL STRENGTH WILL BE A VERY COSTLY, BUT NECESSARY TO THE NATIONAL DEFENSE POSTURE, EFFORT. ONE PROPOSAL THE NAVAL RESERVE ASSOCIATION OFFERS FOR CONSIDERATION WOULD BE COST EFFECTIVE FOR THE NATION, PROVIDE THE NAVY WITH A TOP NOTCH CAPABILITY AND REINFORCE PRESIDENT REAGAN'S AND SECRETARY WEINBERGER'S PROMISE TO BUILD UP THE RESERVE FORCES. NRA PROPOSES THAT THE 13TH AND/OR THE 14TH NAVY AIR WINGS BE ASSIGNED TO THE NAVAL AIR RESERVE. THE PROPOSED GROUPS WOULD MAINTAIN THEIR PRESENT AIR WING STRUCTURE BUT WOULD BE MODERNIZED WITH AIRCRAFT SIMILAR TO THE ACTIVE AIR WINGS. THE FUNDING OUTLAY FOR AIRCRAFT PROCUREMENT WOULD NOT BE REDUCED

SIGNIFICANTLY, HOWEVER, OPERATING FUNDS OF ALL KINDS WOULD BE CONSIDERABLY LESS. THE RESERVE UNITS WOULD NOT BE ABLE TO DEPLOY FOR EXTENDED PERIODS, CONSEQUENTLY, THEY WOULD NECESSARILY BE ASSIGNED TO NON-DEPLOYING CARRIERS. THE NON-DEPLOYING SHIP/S COULD BE IN OVERHAUL OR SLEP; BE USED AS A TRAINING CARRIER; OR BE IN A READY RESERVE STATUS. A HIGH LEVEL POLICY DECISION MIGHT HAVE TO BE MADE TO REDUCE THE CARRIER DEPLOYMENT REQUIREMENTS TO ACCOMODATE THE PROPOSAL TO UTILIZE THE RESERVE AIR WINGS. HOWEVER, THE CUTBACK IN OPERATING FUNDS, WITHOUT LOSING WARTIME FIGHTING CAPABILITY, COULD PROVIDE A LARGER TOTAL FORCE IN THE EVENT OF HOSTILITIES FOR THE SAME OR A LESSER AMOUNT OF MONEY.

THE SECNAV AND THE CNO PROPOSE TO START THE HORIZONTAL INTEGRATION OF CURRENT AIRCRAFT MODELS INTO THE NAVAL AIR RESERVE IN FY 1984. NRA PROPOSES ADD-ONS TO THE NAVAL RESERVE BUDGET IN FY 1983 TO COMMENCE TRANSITION OF ONE OF THE RESERVE LIGHT ATTACK SQUADRONS INTO THE A-6E, INTRUDER, A MEDIUM ATTACK AIRCRAFT. THIS PROPOSAL WOULD PROVIDE THE RESERVE AIR WING WITH A MEDIUM ATTACK, ALL-WEATHER CAPABILITY IT DOES NOT POSSESS AT THIS TIME. IT WOULD ALSO HELP AMELIORATE THE UNSATISFACTORY SITUATION WHICH IS PRESENT IN THE A-7B RESERVE LIGHT ATTACK PROGRAM. A SIGNIFICANT NUMBER OF THE RESERVE A-7Bs HAVE LARGE GAPING HOLES WHERE THE ENGINES ARE SUPPOSED TO BE. FOREIGN MILITARY SALES DECISIONS HAVE CAUSED THIS PROBLEM WHICH WILL NOT BE SOLVED, WITH REPLACEMENT ENGINES, FOR SEVERAL YEARS.

NRA PROPOSES TO COMMENCE THE BUY OF A-6Es FOR THE NAVAL RESERVE IN FY 1983. THE ORIGINAL IDEA WAS TO FUND THE TRAM (TARGET RECOGNITION ATTACK MULTIPLE SENSOR) MODIFICATION TO A MINIMUM OF FOUR AIRCRAFT TAKEN FROM THE POOL OF PLANES AWAITING THE TRAM MODIFICATION. THIS WOULD HAVE COMMENCED THE TRANSITION OF THE RESERVE SQUADRONS INTO THE A6E IN FY 1983 AT A MODEST PRICE OF APPROXIMATELY $4.0 MILLION/AIRCRAFT. AT THE SAME TIME A BUY OF NEW A-6Es WAS PLANNED TO COMMENCE THE PROCUREMENT OF AN ADDITIONAL 40 PLANES NEEDED TO SUPPORT THE NAVAL RESERVE A-6E SQUADRONS THROUGH THE TURN OF THE CENTURY. THE 40 AIRCRAFT WOULD ALSO PROVIDE FOR THE ASSIGNMENT OF KA-6 TANKERS TO THE RESERVE AIR WINGS, WHICH ARE VITAL TO THE AIR WING CAPABILITY. THE TRAM LINE CANNOT BE EXPANDED AT THIS TIME DUE TO A SHORTAGE OF A CRITICAL COMPONENT OF THE MODIFICATION.

THE PROPOSED PLAN CALLS FOR A BUY OF EIGHT (8) A-6Es IN EACH OF FISCAL YEARS 1983 THROUGH 1987. THE INCREASED PRODUCTION RATE WOULD LOWER THE FLYAWAY COST OF EACH AIRCRAFT FROM $24.6 MILLION TO $20.3 MILLION AND THE COST OF AN AIRCRAFT WITH INTERMEDIATE AND ORGANIZATIONAL MAINTENANCE SUPPORT GEAR FROM $32.5 MILLION TO $25.77 MILLION OR ALMOST $7.0 MILLION EACH. IT WOULD APPEAR THAT THE NATION WINS BOTH WAYS ON THIS. THEY RECEIVE A TREMENDOUS INCREASE IN CAPABILITY AND A MUCH BETTER UNIT PRICE BY BUYING NOW. THE FOLLOWING CHARTS SHOW THE CURRENT AND PROPOSED A6E PROCUREMENT PLANS.

(DOLLARS IN MILLIONS, THEN YEAR DOLLARS, NUMBERS OF AIRCRAFT IN PARENTHESES)

FISCAL YEAR	83	84	85	86	87
CURRENT PLAN*	(8) 260.0	(8) 292.6	(12) 440.7	(12) 317.4	(12) 317.1
PROPOSED PLAN*	(16) 412.4	(16) 456.9	(20) 641.2	(20) 497.8	(20) 492.9
	152.4	164.3	200.5	180.4	175.8
SPARES	9.0	9.0	1.6	1.6	1.6
ADD. COST	161.4	173.3	202.1	182.0	177.4

* INCLUDES INTERMEDIATE AND ORGANIZATIONAL MAINTENANCE SUPPORT GEAR

SUMMARY

THE ABOVE PROPOSAL IS BASED UPON A PROCUREMENT REQUIREMENT OF 40 A-6E AIRCRAFT TO PROVIDE TWO SQUADRONS OF EIGHT (8) AIRCRAFT EACH (10 IN WARTIME) AND FOUR KA-6 TANKERS FOR EACH AIR WING THROUGH THE YEAR 2000. THIS WOULD BE THE FIRST CONCRETE STEP TOWARD IMPLEMENTING THE SPECIFIC INTENTIONS EXPOUNDED BY THE SECNAV AND THE CNO IN THEIR POSTURE STATEMENTS TO THE CONGRESS THIS YEAR. NRA HOPES THAT AT LONG LAST, THE "TOTAL FORCE" AND "ONE NAVY" CONCEPTS ARE ON THE WAY TO BEING REALIZED. THE POSSIBILITY OF THE NATION GAINING WARTIME CAPABILITY AT LESSER COST SHOULD BE ATTRACTIVE TO ALL PLANNERS. NRA APPLAUDS THE NEW INITIATIVES OF SECRETARY LEHMAN AND ADMIRAL HAYWARD AND PROPOSES THE IMMEDIATE COMMENCEMENT OF THE IMPLEMENTATION OF THE PLAN BY THE CONGRESS.

RECOMMENDATION:

THAT THE CONGRESS AUTHORIZE AND FUND THE PROCUREMENT OF EIGHT (8) A6E, INTRUDER, AIRCRAFT IN EACH OF THE FISCAL YEARS 1983 TO 1987 AT AN ADDITIONAL COST OVER BUDGET OF $161.4 MILLION IN FY 1983.

Navy Aircraft Procurement Plan

Last year NRA published the Naval Aviation Procurement Requirements Chart in our testimony before this committee showing the current Naval Aviation Procurement Plan and the approved budget and budget proposals from FY 1981 to FY 1986. It was obvious at the time that the previous plans for acquisition of Naval Aircraft fell far short of the need. The Procurement Plan did not compensate even for normal peacetime attrition. The Reagan amended FY 1982 budget made considerable additions to the Carter proposal and this year's budget submission continues that trend (See the accompanying chart - "Aircraft Procurement ". There is a very significant increase in numbers of aircraft. This is highlighted by the fact that the numbers of aircraft in the Procurement Plan increase significantly in FY 1983 and the out years of the Five Year Defense Plan (FYDP). For example: The total number of Naval Aircraft approved in the FY 1981 budget was 195, many of which were add-ons by the Congress; the Carter plan for FY 1982 proposed only 121 aircraft which was amended to 153 by the Reagan amendment; The Carter plan called for a gradual increase in the number of aircraft to a total of 263 in FY 1986 while the present proposal is to reach 431 in FY 1986 and on to 442 in FY 1987.

One of the most encouraging highlights of this budget request is for a buy of 39 C-2 Cod aircraft from FY 83-87. At long last, the Navy has decided to resolve its Carrier On Board Delivery shortcoming. The Indian Ocean operation was probably a blessing in disguise. It revealed many shortcomings in the Pentagon planning including the critical need for quick response, on board delivery of essential parts and people in a remote ocean area. Fortunately, this was an alert situation not an actual combat scenario. It is understandable that when money is in such short supply the tendency is to go for fighting weapons. However, without the support, those weapons systems soon lose their capability to destroy the enemy and become impotent or passive members of the team.

It is a travesty of justice that the present Administration has to make up for years of severe underfunding of the Navy, particularly the Naval Air arm. NRA applauds the effort to bring that force back up to a reasonable level. NRA also believes that a greater dependence upon the Naval Reserve is in order to

HELP BRING DOWN THE COST OF THE NAVAL AIR EXPANSION TO 13-15 AIR WINGS. SPECIFIC RECOMMENDATIONS ARE INCLUDED ELSEWHERE IN THIS PRESENTATION OF THE ISSUES CONCERNING AIRLIFT MOBILIZATION, AIR WING MODERNIZATION, RESERVE P-3C PROCUREMENT AND P-3A/B TACTICAL/NAVIGATION MODERNIZATION. THE NRA PROPOSAL TO USE MODERNIZED NAVAL RESERVE AIR WINGS AS THE 13TH AND/OR 14TH, NON-DEPLOYABLE IN PEACETIME, AIR WING SHOULD BE EXAMINED VERY CLOSELY TO FIND OUT WHETHER IT CAN BE RESPONSIVE TO THE NATION'S NEEDS.

THE NAVAL RESERVE ASSOCIATION STRONGLY SUPPORTS THE INCREASED TEMPO OF NAVAL AIRCRAFT PROCUREMENT INCLUDED IN THE FY 1983 BUDGET AND THE PLAN FOR THE FYDP OUT YEARS AS A MINIMUM TO MEET THE REQUIREMENT.

RECOMMENDATION:

THAT THE CONGRESS FULLY SUPPORT THE PROPOSED NAVAL AVIATION PROCUREMENT PLAN FOR FY 1983 WITH ADD-ONS SPECIFICALLY PROPOSED BY THE NAVAL RESERVE ASSOCIATION IN THE TACAIR, AIRLIFT AND MARITIME PATROL AREAS.

SUMMARY

IN SUMMARY, MR. CHAIRMAN, THE NAVAL RESERVE ASSOCIATION FULLY SUPPORTS THE ADMINISTRATION'S EFFORTS TO REGAIN MARITIME SUPERIORITY. THIS OBVIOUSLY INCLUDES THE AIRCRAFT TO FILL OUT AND SUPPORT THE WARTIME BATTLE GROUPS. OUR NATION'S SURVIVAL COULD WELL DEPEND UPON CONTROL OF THE SEAS.

NRA HAS BEEN DISAPPOINTED THAT THE CAMPAIGN PROMISE OF PRESIDENT-ELECT REAGAN, AND THE FOLLOW-ON VERIFICATION BY SECRETARY WEINBERGER DURING HIS CONFIRMATION HEARING, TO BUILD-UP THE GUARD AND RESERVE FORCES, HAVE NOT CULMINATED IN ANY PERCEPTIVE ACTION TO ACCOMPLISH THAT GOAL. IN THE AMENDED REAGAN BUDGETS LAST YEAR, AND THE ONE PROPOSED FOR FY 1983, THERE IS NO DISCERNIBLE MOVEMENT TO PLACE MORE EMPHASIS ON THE USE OF THE RESERVE COMPONENTS OR EVEN TO COMBAT THE GROSS EQUIPMENT SHORTAGES IN THE GUARD AND RESERVE FORCES.

NRA BELIEVES, IF THE NATION'S CITIZENRY IS GOING TO SIT STILL FOR A CONTINUED IMPROVEMENT IN THE COUNTRY'S DEFENSE POSTURE, THE PUBLIC IS GOING TO HAVE TO BE SHOWN THAT A HIGH PRIORITY IS BEING GIVEN TO THE SUPPORT OF THE GUARD AND RESERVE MODERNIZATION AND ITS CONTRIBUTION TO THE TOTAL DEFENSE

EFFORT. WE BELIEVE THAT THE GREATER THE GUARD AND RESERVE PARTICIPATION IN THE "TOTAL FORCE", THE BETTER THE ACCEPTANCE BY THE CITIZENRY.

MR. CHAIRMAN, WHAT THE NRA IS OFFERING TODAY ARE ALTERNATIVES WHICH SHOULD SAVE CONSIDERABLE MONEY IN THE OUT YEARS WITHOUT LOSING ANY WARTIME CAPABILITY. IN FACT, EACH OF THE PROPOSALS MADE BY NRA TODAY WILL PROVIDE A QUANTUM INCREASE IN READINESS, FIGHTING CAPABILITY, RESPONSE TIMES AND OPERATIONAL EXPERIENCE. GIVEN THE HARDWARE, THE NAVAL RESERVISTS WILL EQUAL OR OUTGAIN THE ACTIVE FORCES ANY TIME.

THIS COMMITTEE ROCKED THE BOAT LAST YEAR WHEN IT ADDED ALMOST A BILLION DOLLARS TO GUARD AND RESERVE PROCUREMENT. ALTHOUGH MUCH OF THAT ADD-ON WAS DROPPED OUT IN CONFERENCE, IT WAS HOPED THAT THE MESSAGE GOT ACROSS TO THE SERVICES. UNFORTUNATELY, THE G/R DOLLARS ARE NOT IN THE FY 1983 BUDGET.

LAST YEAR BOTH HOUSES PUT IN ADDITIONAL FUNDS TO BUY TACTICAL/NAVIGATION MODERNIZATION KITS FOR RESERVE P-3A/Bs. THE MONEY WAS LOST IN THE CONFERENCE. THIS YEAR THERE ARE NO DOLLARS IN THE BUDGET FOR THE TAC/NAV MOD LEAVING 71 RESERVE AIRCRAFT WITHOUT THE CAPABILITY TO PERFORM THE MPA MISSION. THE CUTBACK IN THE P-3C PROCUREMENT HAS COMPOUNDED THE SITUATION FOR THE OUTYEARS. NRA PROPOSES THAT THE CONGRESS FUND THE TAC/NAV MOD FOR THE REMAINING 71 RESERVE P-3A/Bs IN THE FISCAL YEARS 1983 AND 1984. THE COST FOR 36 AIRCRAFT IN FY 1983 WOULD BE $50.4 MILLION WITH THE REST OF THE MODERNIZATION KITS BEING PURCHASED IN FY 1984.

ALSO PROPOSED IS THE PROCUREMENT OF (3) P-3C UPDATE III, ORIONS, EACH YEAR FOR THE NEXT THREE YEARS. THIS WILL PROVIDE THE NAVAL RESERVE WITH THE HARDWARE TO CARRY OUT ITS ASSIGNED MISSION OF TRAINING 72 CREWS TO AUGMENT THE REGULAR NAVY P-3C SQUADRONS IN THE EVENT OF A MOBILIZATION SITUATION. THE COST WOULD BE $103.5 MILLION IN FY 1983 FOR THE THREE AIRCRAFT.

THE REPLACEMENT OF THE ANCIENT C-118s IN THE NAVAL RESERVE IS A MUST IF THE COMMAND IS TO MEET ITS MOBILIZATION READINESS REQUIREMENTS. TO FILL THIS REQUIREMENT, NRA PROPOSES THE FUNDING FOR THE PURCHASE OF EIGHT (8) USED DC-9s AT THE COST OF $57.8 MILLION IN PROCUREMENT AND $15.7 MILLION IN O&MNR OVER THE BUDGET REQUEST FOR FY 1983. AN ALTERNATE PLAN WOULD BE TO LEASE TWELVE USED DC-9s FOR $16.2 MILLION IN PROCUREMENT AND $27.7 MILLION

IN O&MNR OVER THE BUDGET REQUEST. ALSO REQUESTED IS $119.75 MILLION FOR FOUR (4) C-9Bs AS PART OF THE PLAN TO SUPPLY THE REMAINING C-9B REQUIREMENT OF THE FLEET AND MARINE CORPS (ELEVEN AIRCRAFT) OVER A THREE YEAR PERIOD.

FINALLY, NRA RECOMMENDS TO THE COMMITTEE THAT THE MODERNIZATION OF THE RESERVE TACTICAL AIR WINGS BE COMMENCED THIS YEAR WITH THE PROCUREMENT OF EIGHT (8) A-6E INTRUDERS EACH YEAR FOR FIVE YEARS. THIS WOULD PROVIDE A SQUADRON OF A-6Es IN EACH OF THE RESERVE AIR WINGS AS WELL AS A FOUR PLANE UNIT OF KA-6 TANKERS FOR BOTH RESERVE AIR WINGS TWENTY AND THIRTY. THE COST OVER BUDGET FOR FY 1983 WOULD BE $161.4 MILLION. FUNDING OF THIS REQUEST WOULD COMMENCE THE MODERNIZATION OF THE TWO RESERVE AIR WINGS AND BE THE FIRST CONCRETE STEP TOWARD IMPLEMENTING THE INTENTION EXPRESSED BY SECRETARY LEHMAN AND ADMIRAL HAYWARD OF MODERNIZING THE NAVAL AIR RESERVE TACAIR COMMUNITY. IT WOULD ALSO BE THE INITIAL ACTION BY THE CONGRESS TO DESIGNATE AND EQUIP ONE OR BOTH OF THE UNITS AS THE 13TH AND/OR 14TH AIR WINGS FOR THE WARTIME BATTLE GROUPS NOW PROPOSED.

"TOTAL FORCE" AND "ONE NAVY" ARE TERMS WHICH CAN FINALLY BE USED TO APTLY DESCRIBE THE REAL WORLD IF THE CONGRESS WILL NOW TAKE THE LEAD IN THE EFFORT TO MODERNIZE THE GUARD AND RESERVE. WITH REASONABLE PLANNING AND THE EXECUTION OF THE PLAN, THE NATION WILL REALIZE INCREASED SECURITY AND THE HARRASSED TAXPAYER WILL BENEFIT FOR MANY YEARS TO COME.

MR. CHAIRMAN, COMMITTEE MEMBERS, NRA SINCERELY APPRECIATES YOUR LEADERSHIP IN PROVIDING THIS COUNTRY WITH A GUARD AND RESERVE CAPABLE OF STEPPING INTO THE BREECH WHEN THEY ARE NEEDED IN A (POSSIBLE) CONFLICT. FOR THE MOST PART, THE CAPABILITY IS THERE IF THE SUPPORT IS PROVIDED. WHEN THE RESERVE COMPONENTS HAVE BEEN MANNED AND EQUIPPED AND WHEN THEY HAVE BEEN CALLED, THEY HAVE PERFORMED ADMIRABLY IN COMBAT AND IN COMBAT SUPPORT ROLES. NRA RECOMMENDS THAT THIS CONGRESS, THIS COMMITTEE, PICK UP THE BALL AND MOVE OUT SHARPLY. THE NAVAL RESERVE AND THE OTHER RESERVE COMPONENTS WILL REPAY YOUR EFFORTS MANY TIMES IN COST EFFECTIVE WARTIME CAPABLE ASSETS.

MR. CHAIRMAN, NRA RESTS ITS CASE.

FACTS - P-3A/B TAC/NAV MODERNIZATION

1. SOVIET SUBMARINE FORCE (ATTACK & STRATEGIC) IS GREATEST THREAT TO OUR NATION'S SURVIVABILITY - THREAT IS INCREASING.

2. DEFENSE PLANNERS MUST PROVIDE MAXIMUM FEASIBLE COUNTER TO SOVIET UNDERSEAS THREAT.

3. TACTICAL/NAVIGATION MODERNIZATION (TAC/NAVMOD) PROVIDES P-3A/B AIRCRAFT WITH NEAR BASELINE P-3C CAPABILITY.

4. TAC/NAVMOD PROVIDES MAJOR IMPROVEMENTS IN CRITICAL AREAS OF TACTICS, GEOGRAPHIC NAVIGATION, TACTICAL DISPLAY, DATA MANAGEMENT, RELIABILITY MAINTENANCE, CREW WORKLOAD AND SYSTEM INTEGRITY.

5. ASW CAPABILITY OF MODERNIZED AIRCRAFT IS 75% IMPROVED OVER UNMODIFIED.

6. OPEN-OCEAN ASW CAPABILITY OF UNMODIFIED AIRCRAFT UNRELIABLE.

7. FAILURE TO PROVIDE MODERNIZATION WOULD CONSTITUTE PLANNED OBSOLESCENCE.

8. RESERVE P-3 SQUADRONS WOULD MOST LIKELY BE RECALLED EARLY IN HEIGHTENED WORLD TENSION SITUATION TO BE DEPLOYED AROUND THE WORLD.

9. P-3A/B MODERNIZATION PROVIDES HIGHEST IMPROVEMENT IN CAPABILITY FOR LOWEST DOLLAR COST OF ANY DEFENSE PROGRAM.

10. MULTI-YEAR PROCUREMENT FOR A TWO YEAR BUY-OUT FOR THE REMAINING 71 NAVAL NAVAL RESERVE P-3/AB'S WOULD COMPLETE MOD PROGRAM AND PROVIDE COST SAVINGS OF APPROXIMATELY 10%-15% OVER SEPARATE YEAR PURCHASES.

11. PRESENT NAVY CAPABILITY TO INSTALL MOD KITS IS 36/YEAR.

12. PROPOSED PLAN:

RESERVE P-3A/B TAC/NAV MOD

	FY 1979	FY 1980	FY 1981	FY 1982	FY 1983	FY 1984
KITS PROCURED	14	0	34	15		
PROCUREMENT REQUIRED (COST)*					36 ($50.4M)	35 ($49.0M)
UNMODFIED AIRCRAFT	120	120	86	71	35	-0-

*BASED ON MULTI-YEAR PROCUREMENT

13. COST FOR FY 83 WOULD BE $50.4 MILLION OVER BUDGETED REQUEST BASED UPON TWO YEAR, (FY83 AND FY84) MULTI-YEAR PROCUREMENT.

14. RECOMMENDATION: THAT THE CONGRESS FUND THE MODERNIZATION OF 71 NAVAL RESERVE P-3A/B AIRCRAFT, 36 IN FY83 FOR $50.4 MILLION AND 35 IN FY84 FOR $49.0 MILLION, IN A MULTI-YEAR PROCUREMENT THUS PROVIDING THE TAXPAYER WITH A QUANTUM JUMP IN PROTECTION FOR A MINIMUM COST.

FACTS - NAVY AIRLIFT MODERNIZATION

1. AIRLIFT CONSOLIDATION UNDER MAC HAS BEEN ACCOMPLISHED TO THE MAXIMUM BY NAVY. AIR FORCE AGREES THAT THE REMAINING 20% IS UNIQUE TO THE NEEDS OF THE NAVY AND SHOULD BE SATISFIED BY NAVY ORGANIC AIRLIFT.

2. NAVY UNIQUE AIRLIFT NEEDS ARE CHARACTERIZED BY

   SHORT LEAD TIME,
   LOW VOLUME, AND
   HIGH FREQUENCY

   OF DEMANDS TO A MULTIPLICITY OF UNPREDICTABLE FLEET LOCATIONS FOR SATISFACTION OF URGENT REQUIREMENTS.

3. CONGRESSIONAL HEARINGS CONSISTENTLY HAVE RESULTED IN SUPPORT FOR NAVY INTRA-THEATER AIRLIFT MODERNIZATION.

4. A PORTION OF THE REQUIREMENT IS BEING SATISFIED BY ANTIQUE C-118 AIRCRAFT WHICH ARE BEING PHASED OUT WITH NO REPLACEMENT AVAILABLE EXCEPT THE PRESENT C-9 FLEET. JUST TO MAINTAIN THE STATUS QUO, A SIGNIFICANT C-9 PROCUREMENT PROGRAM IS REQUIRED.

5. DEFENSE TACTICAL AIRLIFT MODERNIZATION (DODTAM) STUDY CONDUCTED BY OSD (JANUARY-JULY 1978), CONFIRMED THE NEED FOR 57 ADDITIONAL C-9Bs.

6. THREE NEW C-9Bs WERE ADDED TO THE BUDGET IN THE LAST FOUR YEARS.

7. USED DC-9 AIRCRAFT WERE ADDED TO THE BUDGET IN FY 82 BY THE ARMED SERVICES COMMITTEES BUT WERE DROPPED OUT IN CONFERENCE.

8. IMMEDIATE, RESPONSIVE, WARTIME AIRLIFT TO FLEET COMMANDERS AROUND THE WORLD IS IMPERATIVE. A MODEST NAVY ORGANIC AIRLIFT CAPABILITY HAS BEEN CLEARLY SHOWN TO BE THE ONLY METHOD OF PROVIDING THE REQUISITE RESPONSE. CAPABILITY UTILIZED FULLY IN PEACETIME TO PROVIDE REQUIRED READINESS TRAINING AND AIRLIFT FOR FLEET AND RESERVE SUPPORT.

9. PROCUREMENT OF C-9B/DC-9 IS THE LOWEST COST OPTION TO SATISFY UNIQUE NAVY INTRA-THEATER NEEDS. ALL OTHER REQUIREMENTS SATISFIED BY MAC OR MTMC.

10. C-9B HAS BEST DISPATCH RELIABILITY RATE (97+% IN CONUS) OF ANY OPERATIONAL AIRCRAFT IN THE MILITARY INVENTORY.

11. C-9B AIRLIFT IS OPERATED BY THE NAVAL RESERVE FOR THE ENTIRE NAVY - ACTIVE AND WEEKEND WARRIOR.

12. PEACETIME ORGANIC AIRLIFT IS VITAL TO THE READINESS OF THE NAVAL RESERVE FORCE. TRANSPORTATION TO TRAINING PLATFORMS FROM DRILL SITES NECESSARY FOR HANDS-ON READINESS TRAINING.

13. QUICK RESPONSIVE AIRLIFT FOR ACTIVE AND RESERVE NAVY PERSONNEL SHOWS PERSONNEL NAVY CARES FOR THEIR WELL BEING. VERY IMPORTANT RECRUITING/RETENTION TOOL.

14. THE PROGRAM MOST RESPONSIVE TO THE NAVY WARTIME FLEET REQUIREMENT IN CONSTANT FY- 83 DOLLARS FOLLOWS:

C-9B PROCUREMENT

FISCAL YEAR	83	84	85	82-85
C-9B (FLYAWAY)	4/105.45	4/105.45	3/79.0	11/289.9
SITE SUPPORT (SITES)	6.8(2)	6.8(2)	3.4(1)	17.0
INITIAL SPARES	7.5	7.5	5.5	20.5
	119.75	119.75	87.9	327.4

14. LEASE/BUY OF USED DC-9s MOST EXPEDITIOUS AND ECONOMICAL WAY OF PROVIDING RESERVE AIRLIFT NEEDS AND RETAINING TRAINED PERSONNEL.

15.

BUY USED DC-9s (8/FY 83, 4/FY 84)

FISCAL YEAR	FY-83	FY-84	FY-85
FLYAWAY COST	(8) 50.0	(4) 25.0	(0) -
SITE SUPPORT(*)	8.0	2.5	-
SPARES (INITIAL(*)	16.0	8.0	-
OMPMR (POL)	14.3	19.0	19.0
OMPMR (MAINTENANCE)	4.7	6.2	6.2
OMPMR (TRAINING)**	.8	-	-
SUB TOTAL	93.8	60.7	25.2
LESS FY 83 BUDGET PROCUREMENT	(16.2)		
LESS FY 83 C-118 OMPMR (1/2 YEAR)	(4.1)		
TOTAL	73.5		

(PROCUREMENT 57.8 OMPMR 15.7)

*COSTS BASED UPON UNKNOWN OFFER OF USED DC-9-31 AIRCRAFT WHICH INCLUDES MUCH SITE SUPPORT AND SPARE PARTS.
**TRAINING COSTS FOR 64 PILOTS AND 22 ENLISTED CREW.

LEASE 12 Used DC-9s

Fiscal Year	FY-83	FY-84	FY-85
Lease (O&MNR)	12.0	12.0	12.0
Site Support	11.4	-	-
Spares (Initial)	21.0	-	-
O&MNR (POL)	14.3	14.3	14.3
O&MNR (Maintenance)	4.7	4.7	4.7
O&MNR (Training)	.8	-	-
Sub Total	64.2	31.0	31.0
Less FY 83 Budget Procurement	(16.2)		
Less FY 83 C-118 O&MNR	(4.1)		
Total	43.9		

(Procurement 16.2 O&MNR 27.7)

16. Offsetting costs in FY 83 budget are $16.2M in Procurement and $4.1M in O&MNR.

Recommend - Purchase eight (8) used DC-9s at the cost of $73.5 Million over budget in FY 1983 (includes Procurement and O&MNR).

- Purchase four (4) new C-9Bs at the cost of $119.75 Million over budget in FY 1985.

NAVY ORGANIC LOGISTICS AIRLIFT REQUIREMENTS

		FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
Fleet Wartime Requirements***							
	LANT	9	9	9	9	9	9
	MED	3	3	3	3	3	3
	PAC	9	9	9	9	9	9
	USMC	4	4	4	4	4	4
	TOTAL	25	25	25	25	25	25
C-9B on Board*		14	14	14	18	22	25
Additional C9Bs Required*		11	11	11	7	3	0
Naval Reserve Needs to Replace C-118s							
DC-9 Lease or Procurement*		4	12	12	12	12	12
Operational C-9Bs		1	3	3	3	3	3
Additional Needs		10	0	0	0	0	0
Total NR Requirements		15	15	15	15	15	15
Total Fleet & Reserve Shortage*							
Fleet & USMC		11	11	11	7	3	0
Reserve		10	0	0	0	0	0
Total Then FY*		22	11	11	7	3	0
Congressional Program (Proposed)							
Additional C-9B Approval Required		0	4	4	3		
C-9B Delivery Schedule*		**	2	0	4	4	3

* Based on Program Approval by Congress.
** 1 C-9B previously approved in FY 79.
*** Three of these A/C are for pipeline requirement of 6.1% of total A/C (requirements are based upon Department of Defense Tactical Airlift Modernization Study (DOTAM) findings).

Mr. BENNETT [presiding]. Thank you. On line 14 onStreet page 30 you refer to lease/buy of DC-9's. You made reference in your comments to that.

Captain COLEMAN. Yes, sir.

Mr. BENNETT. How does that lease operate? Who owns these planes and what are they being used for now?

Captain COLEMAN. May I have Captain Bell who spent an infinite amount of time on this thing go into it? I can summarize it, but he knows it backward and forward.

Captain BELL. These are used DC-9's that are commercially used now. There are different airlines that have the aircraft. They are upgrading to a different type aircraft. These are available now for lease and/or purchase.

Mr. BENNETT. Thank you very much.

Mrs. Holt.

Mrs. HOLT. I have no questions, Mr. Chairman. I certainly appreciate the testimony. I think that our chairman is absolutely right that we are going to have to put more teeth in our mandate to the Defense Department. I have been very disappointed in their failure to really come up with some hard figures on what we are planning to do. I think you can count on this committee. We appreciate very much the job you folks are doing.

Captain COLEMAN. Thank you.

Mr. HUNTER. On this practical navigation modernization package you feel we should go forward with a modernization of the P-3A/B aircraft to what you could call a near base line P-3 capability.

What does that cost per aircraft?

Captain BELL. The cost is $1.4 million per aircraft.

Captain COLEMAN. Very cost-effective, Mr. Hunter.

Mr. HUNTER. To buy a P-3C costs what?

Captain BELL. Around $34½ million or $40 million right now.

Mr. WHITE. A P-3?

Captain BELL. The P-3C, I was quoted $34½ million from Lockheed for the ones that we put in here.

Mr. HUNTER. Mr. Chairman, I think that is a pretty important point. That procurement cost of the P-3C really licks us. That is $34½ million, I think Mr. White said it goes up to $50 million if you cut the procurement down some. Yet we have the capability, if that statement is accurate, to upgrade these P3-A/B aircraft to almost the capability of the P-3C for about $1.4 million. In other words, close to one-thirtieth of the cost.

I think perhaps we should explore that possibility a little more. I know we have been quite taken back by the cost of the P-3C. It is a heavy shot.

Mr. BENNETT. I appreciate that comment.

Mr. HUNTER. I have one other fast question.

What part of the antisubmarine warfare mission can the Reserve carry out right now, because the antisubmarine warfare mission is a mission that gets extremely critical when it gets close to our coastal areas?

Captain COLEMAN. They are carrying it out now using the P-3A and B's. They are out in the Azores, off Bermuda. They go to the Med.

Mr. HUNTER. How far can you folks patrol from the coast?

Captain COLEMAN. You are concerned with the range?

Mr. HUNTER. Yes.

Captain BELL. Probably about 800 miles.

Mr. HUNTER. You are right now shouldering a large portion of that coastal antisubmarine warfare defense?

Captain BELL. Not only that, but they are sending a detachment over to the Med and the Pacific and keeping planes on station out there for long periods of time by using partial squadrons, Heel and Toe and so forth.

Mr. HUNTER. Thank you, Mr. Chairman.

Mr. BENNETT. Thank you for a very fine presentation.

Captain COLEMAN. Thank you, Mr. Chairman.

Mr. BENNETT. Next is Major General Roberts, AUS retired, Executive Director, Reserve Officers Association of the United States.

STATEMENT OF MAJ. GEN. J. MILNOR ROBERTS, AUS (RETIRED), EXECUTIVE DIRECTOR, RESERVE OFFICERS ASSOCIATION OF THE UNITED STATES

General ROBERTS. Good morning, Mr. Chairman, and members of the committee.

I would ask that my complete statement be inserted for the record.

Mr. BENNETT. Without objection it is so ordered.

General ROBERTS. I would like to highlight some portions of it.

You have heard from General Greenlief that the Army National Guard has serious equipment problems. I would add that the Army Reserve has equal, if not greater, equipment problems.

Bearing in mind that 57 percent of the Army Reserve units will be deployed within the first 30 to 60 days and virtually all within 90 days, at present they have on hand 63 percent of their authorized peacetime force level of equipment, but only 32 percent of the mobilization requirement.

On page 3 of my prepared statement I have shown the dollar numbers of the equipment posture. What is on hand, what is authorized, and what is required by commodity.

We also point out that these numbers do not include any procurement of M1 tanks for the Army Reserve because the number is small, and also I think the price is still in some question.

Since there is an obviously critical shortage of equipment for the Reserve and since no breakout has been made by the Department of the Army, we would suggest that this committee ask the Army for a list of types, quantity and cost of units of equipment required for early deploying units that could be provided in the fiscal year 1983 budget.

Mr. BENNETT. I will ask the staff to do that.

General ROBERTS. And that such money be fenced for Army Reserve procurement. We estimate that a $275 million authorization would go a long way to cure the problem of these early deploying units and $275 million is not very much in today's world, but we suggest that you ask them if this would be appropriate.

Mr. BENNETT. If the chairman of the subcommittee agrees I will ask the staff to check into that.

Mr. WHITE. Your statement is not clear. Do you have any specific programs in mind or are you just referring to a blanket authorization?

General ROBERTS. This would be limited to units within D to D plus 30.

Mr. WHITE. In terms of items of equipment?

General ROBERTS. No, we do not. We can supply it for the record if you would like.

Mr. BENNETT. I think that would be helpful if you did. Don't you think so?

Mr. WHITE. Yes, sir.

Very seldom do we ever do blanket authorization. I don't recall ever having done it.

Mr. BENNETT. This is subject to Chairman Stratton's concurrence. I think it would be helpful if you did give us some specifics.

General ROBERTS. To give you an idea, last spring there was a hearing held before the full committee when we brought in a commander of the Rapid Deployment Force. Their mission includes supply of petroleum. They didn't have equipment to do it. We were told the pumps may be available in the active inventory. This is the kind of thing you run into.

We will be glad to supply that for the record.

PROCUREMENT PRIORITIES, ARMY RESERVE

[Dollars in millions]

Item description	Quantity	Cost
Package 1 (RDF-A):		
1. F36090 Crane Barge 89–250 T	4	$4.9
2. F39378 Crane Whl Mtd 20T	9	1.0
3. F43067 Crane Whl Mtd H–446A	15	.9
4. L36739 Lndg Craft Mech 69 Ft	13	2.1
5. L36876 Lndg Craft Util 115 Ft	6	8.3
6. L67371 Lighter Amph S–P 15T	12	1.2
7. L67508 Lighter Amph 60T 61 Ft	16	6.2
8. S01373 Spch Sec. FQ TSEC/Ky57	545	1.1
9. S70027 Stlr LB 22½T M871	932	9.8
10. S70661 Stlr LB Hvy Equip 60T	44	3.1
11. S72024 Stlr Stake M127A2C	355	3.8
12. S72188 Stlr Tank 5,000G M857	352	13.1
13. T61035 Trk Tctr HET M911	24	2.8
14. T91656 Trk Trac 66,0000 M916	23	1.6
15. X40009 Trk Cgo 2½T M35A2	62	1.7
16. X40831 Trk Cgo 5T 6x6 M813	115	5.1
17. X58367 Trk Waters 1,000G M50A3	23	1.1
18. X59326 Trk Trac 5T 6x6 M818	94	4.1
19. X70909 Tug 600 to 650 HP	6	1.9
20. X71046 Tug 1,200 to 1,530 HP	4	2.2
21. Troop Support and Aviation Equipment (Items less than 900K)		3.6
22. Communications-Electronic Equipment (Items less than 900K)		2.1
23. Tank-Automotive Equipment (Items less than 900K)		4.2
24. Armament Equipment (Items less than 900K)		0.9
25. Communications Security Equipment (Items less than 900K)		1.2
Total package 1		88
Package 2 (D–D+30):		
1. F39378 Crane Whl Mtd 20T	16	$1.8
2. F43067 Crane Whl Mtd H–446A	63	4.1
3. L36876 Lndg Craft Util 115 Ft	2	2.8

PROCUREMENT PRIORITIES, ARMY RESERVE—Continued

[Dollars in millions]

Item description	Quantity	Cost
4. S10059 Stlr Tk 5,000 GM967	48	2.4
5. S70661 Stlr Lb Hvy Equip 60T	17	1.2
6. S72024 Stlr Stake M127A2C	715	6.8
7. S72188 Stlr Tank 5,000G M857	472	17.5
8. S73372 Stlr Tnk 5,000G M969	33	1.7
9. T61035 Trk Tctr Het M911	31	3.6
10. X40009 Trk Cgo 2½T M35A2	465	12.9
11. X40831 Trk Cgo 5T 6x6 M813	164	7.3
12. X58367 Trk Water 1,000G M50A3	47	2.4
13. X59326 Trk Trac 5T 6x6 M818	608	26.6
Total package 2		91.1
Total package 1 and 2		179.1
Package 3 (Early deployers):		
1. A3216 Alarm Chemical Agent Auto	359	$1.1
2. H01855 Elct Shop AN/ASM-189LP	23	1.7
3. K24862 Heater Duct Type Ptbl	488	1.1
4. R94977 Rifle 5.56mm M16A1	5,837	1.9
5. S70594 Stlr LB 40T 6-whl	124	2.5
6. T10275 Shop Eq Elect Rep Set	19	1.0
7. T61171 Truck Tractor MET 8X675000	73	5.4
8. W95811 Trailer Cargo 1½T M105A2	360	1.6
9. X40077 Truck Cargo 2½T M35A2C	70	1.9
10. X60833 Truck Utility ¼T M151A2	145	1.5
11. X62237 Truck Van Exp 5T M820	26	2.6
12. F20404 CTMS Sets AN/GLQ-3	3	2.0
13. F49399 Crush Screen Plan 75T	8	1.0
14. F49673 Crush Screen Plant 225	2	.9
15. F77671 Data Anal OL-88 MYK-8V	2	1.6
16. J35629 Gen Set Del Eng PU650	74	1.8
17. J74852 Grader Mtr 12,475	28	3.2
18. K30548 HcPtr Elct CTMS EH-1H	8	2.8
19. K31795 HcPtr Util UH-1H	33	20.4
20. L22987 Key Genr TSEC/KG-27	230	.9
21. M28999 Med Eq Set Med Trmt	14	1.2
22. M29011 Med Eq Set Med Trmt	93	1.6
23. M57048 Mixing Plant Asphalt	1	1.2
24. P45003 Pur Unit Util Pack	64	8.4
25. Q92899 Rdo Tml AN/TRC-151 LP	26	3.0
26. R36854 Rcvg Set Rdo, AN/TRQ-32	12	1.6
27. R78067 Rptr Set AN/TRC-152 LP	17	2.3
28. W88699 Tractor FT w/Buldoz	60	7.5
29. X44403 Trk Dump 20T DD 12 Cy	97	7.2
Total package 3		90.9
Total packages 1, 2, and 3		270.0

Note—SB 700-20, Sept 81, dollars used

General ROBERTS. I don't want to dwell too long on the equipment requirements of the Naval Reserve because the Naval Reserve Association has just testified pretty much along the same line.

We endorse what has be :n done in the Navy. We are particularly happy to see the frigate program now in operation that the Navy has initiated for the Reserve, 16 frigates being supplied over a period of 7 or 8 years. I was present when the first one was transferred just 2 months go.

We also believe that the present Secretary of the Navy and CNO have a very favorable attitude toward the Reserve and we are encouraged to see that they are planning to have a horizontal flow of equipment come into the Reserve rather than the hand-me-downs of the past with regard to aircraft, and to a certain extent to surface units.

Some of the new frigates are going to be delivered directly to the Reserve.

We would endorse what has been said about the C-9 program. Facing the realization the C-118's are going to fall out of the sky, they went ahead and leased a few of those from the civilian airlines in the last several months and they are planning to get more in 1983.

As the NRA has suggested, we would endorse the procurement of some brand new C-9B aircraft in 1983 as well for one reason: If that production does not continue it will shut down the line, and then we would have a real problem of ever getting them. So it is worth, I think, keeping that in mind.

We also endorse what has been said about the upgrading of the P-3's. We believe that it would be worthwhile to initiate a program buy for new P-3's, two or three of them for the Reserve, because after all, upgrading old equipment is not going to do the job forever.

With regard to the carrier wings, we were very pleasantly surprised to hear from the Navy that they plan as a matter of fact to put F-18's and A-6E aircraft into the Naval Reserve directly from new equipment buys, beginning I think in 1985. We endorse that program and we would suggest that you might look into an earlier start by purchasing or directing the purchase of A-6's, eight of them in 1983 for the Naval Reserve.

Much has been said about the Marine Corps. I was invited to make several comments about our statement there. They have a shortfall of equipment of $684.2 million. The fiscal year 1983 budget as submitted would reduce the shortfall by very little. We believe that we ought to take a look at increasing the amount of equipment being purchased for the Marines, particularly with regard to their aircraft. They have some shortages of ground equipment, but they are not critical in our view.

What is critical is their shortages of aircraft for the 4th Marine Division air wing. The Navy is planning to put F/A-18's into the Marine Reserve and also Harriers which would replace the obsolete A-4's. We endorse that program and congratulate the Marines on their initiative.

Also, at the initiation of Congress last year the Marine Reserve got some KC-130 refueling-type aircraft and we recommend that that program be continued with the purchase of four additional KC-130's for the Marine Reserve in 1983.

We also believe that additional helicopters should be purchased for the Marine Air Reserve and an entire 24 Reserve squadron of aircraft be equipped as soon as possible.

Finally, as you know, we cover all the services including the Air Force and we like to brag about the Air Force being the most ready of all the Reserve services and it certainly is. What some people don't realize is that one-third of the total Air Force flying missions

are handled in the Air Force Reserve components with 22 percent of the military personnel and 7 percent of military personnel dollars, which is something to keep in mind in this day and age.

We believe that they should continue to purchase new C-130H model aircraft for the Active Forces and then give the C-130E models to the Air Force Reserve to eliminate the remaining "A" models which are badly obsolete.

Also, the Air Force is now building up the fighter capability in the Air Force Reserve and we endorse that program. They are planning to go to 10 squadrons in fiscal year 1983.

One thing we would suggest is that they look at the possibility of putting F-16's in greater numbers into these squadrons rather than F-4's because of the economies which can be made operating F-16's versus F-4's. They are planning to put some F-16's in by 1985.

We noted with some dismay the comment that General Creech made that, as presently programed, his Tactical Air Command will lose more fighters through attrition than it will procure in the next several years. That is rather disturbing. We believe that the Air Force is doing a good job with its Reserve components. We believe that more and newer equipment would permit them to do a better job.

Thank you very much, Mr. Chairman.

93-273 O—82——72

Written Statement of Maj. Gen. J. Milnor Roberts

Mr. Chairman, and Members of the Committee:

I am especially pleased to have the opportunity of appearing before your Committee to present the views of the Reserve Officers Association on the procurement requirements of the Reserve Forces of the United States. World events continue to underline the importance of our Reserve Forces to our National Defense Posture.

No member of your committee needs to be reminded of the ravages of our present rate of inflation and the need to reduce expenditures whenever possible; however, I am sure that you are fully award that direct expenditures on Reserve Components is limited to about five percent of the Defense budget, yet the Services are relying to a very pronounced degree on those Components upon mobilization. For example, more than 50 percent of Army combat units and nearly half of the total Army available on "M" Day would come from Reserves. Comparable statistics for other Services are available. Given this indication of reliance on Reserves, it is natural to wonder why these Forces, are to a certain extent, still being given second class treatment when they are expected to deliver first class performance within days or weeks in a crisis.

I would now like to address some general Reserve procurement requirements for each of our military services.

ARMY RESERVE

Overall, Army Reserve major equipment status will improve slightly as a result of Congressional initiatives from previous years, FY 1982 funding, and equipment programmed for the Army Reserve from Total Army procurement. Major equipment requirements for Army Reserve units currently in the Rapid Deployment Joint Task Force have been funded and these units will be able to attain authorized objectives as equipment is received. However, remaining Army Reserve units will improve only slightly against authorizations, but they will lose ground against requirements because of modernization changes and force growth.

Equipment is a factor in the readiness equation equal in importance to manning. Army Reserve units in peacetime must have, as a minimum, the essential level of equipment needed for training. Beyond that there must be an assurance that sufficient equipment will be available to Army Reserve units in time to meet deployment schedules and perform wartime missions, especially since 57 percent of Army Reserve units will be deployed within 30 to 60 days, and almost all within 90 days.

The FY 1981 overall equipment on hand status of the Army Reserve was 63 percent of the peacetime dollar value authorized, and 32 percent of wartime dollar value requirements (not considering M1 tank requirements). The Army Reserve equipment status for selected items at the end of FY 1981 is shown.

ARMY RESERVE EQUIPMENT STATUS
(DOLLAR VALUE IN $000 AT END FY 81)

Commodity	Required	Authorized	On Hand	FY 81 Issues All Sources*
Comm-Elct	$ 532,886	$ 261,527	$115,047	$ 6,149
Tank-Automotive	3,338,236	1,445,673	927,166	30,257
Aviation	685,249	442,048	328,956	20,356
Weapons	575,654	318,482	254,591	8,006
Missle	63,907	31,663	5,767	195
Other	716,403	560,989	284,438	17,205
	$5,912,335**	$3,060,382	$1,915,965	$82,168

* Includes Procurement, Depot Maintenance and Redistribution.
** This figure excludes the requirement of the M1 Tank. If the M1 Tank was included, this figure would be $7,546,502.

Total Army modernization must include the Army Reserve. It is vitally important that the Reserve Component forces are adequately modernized in order to be able to perform their missions in support of the Active Component. In some cases, this will require a new generation of equipment, while in other cases, it will be equipment displaced from the Active Component. Fielding forces with incompatible equipment systems compounds the support mission problems for the Total Army. In addition, incompatible equipment systems require additonal repair parts and related equipment to sustain the fighting forces required to meet contingency plan requirements.

Given both the critical dependence of the Total Army on the Army Reserve, and the unacceptable level of modern equipment authorized or on hand in the Army Reserve, we would recommend that the Congress; 1) determine the types, quantity, and cost of required equipment for RDF units, D to D+30 units and other deploying units, and; 2) provide FY 1983 "fenced-off" funding to support priority procurement of the equipment for the Army Reserve. According to our information an additional authorization of $275 million in FY 1983 would appreciably enhance the quality and quanity of equipment in the Army Reserve.

NAVAL RESERVE

In the area of hardware, the most critical immediate need, which has been addressed repeatedly over the past few years, is the maintenance of an organic Navy tactical airlift capability. This need is codified in 10 U.S.C. 5012 (b) and has been verified repeatedly through Congressional hearings and through Navy and OSD studies. Old C118 aircraft are being phased out even more rapidly than planned because of repair and maintenance problems associated with obsolescence. There have been no replacements other than sporadic C9B "buys" in minimal numbers. The history of C9B procurement is a classic case of on-again, off-again procurement "sputter." 13 C9B aircraft are now operational; two were authorized and funded for FY 1980, but were deleted as a result of FY 1980 Supplemental and Recission action. Six were authorized for FY 1981; but only two were funded -- in essence the same two deleted for FY 1980. None were included in the FY 1982 Budget request, but both the House and Senate came to the rescue and authorized procurement of used "airline excess" C9s (12 by the Senate, 6 by the House). However, Administration pressure directed to the Conference Committee resulted in the elimination of the entire C9 procurement for the Naval Reserve. A rather unusual and totally frustrating result, to say the least!

Maintenance of this capability is such a critical immediate need that the Navy has initiated action to lease used C-9 aircraft,

starting in FY 1982, out of existing funding. ROA wholeheartedly commends the Navy for this initiative; however, such desperation action is only a "band-aid" at best. Further Congressional action and support is urgently needed.

The depressed state of the airline industry has made available used DC9s which are an attractive alternative to new aircraft. Use of these "airline excess" planes, however, result in a sacrifice in capability and longevity. A new C9B has longer range, greater flexibility, better cargo convertibility and obviously, much longer service life. Therefore, as we testified last year, ROA strongly supports used C9 procurement but deplores the expedient of such procurement to the exclusion of essential new procurement.

Accordingly, it is strongly urged that four C9B aircraft with appropriate site support and spares be authorized for procurement and eight used C9 aircraft with appropriate site support and spares be authorized for lease/purchase in FY 1983. Maintaining at least a minimal flow of new C9B aircraft each year until the total requirement is met is particularly necessary in view of the fact that the manufacturer no longer produces this version of the C9 for civilian use. Without a demonstrated intention to continue such purchases of C9B aircraft for the Navy, production line realities will dictate significantly higher unit costs.

The program to modernize the ASW capability of Naval Reserve land based patrol aircraft was provided significant momentum by the Congress in the FY 1981 Budget. This program, involving installation of a Tactical Navigation Modernization kit (TACNAVMOD) in P3-A/B aircraft, received no funds in FY 1980. However, in FY 1981 the Congress recognized the need to accomplish such modernization rapidly so that Naval Reserve ASW aircraft would be combat ready in the event of mobilization. Accordingly, Congressional action provided for installation of TACNAVMOD in 34 aircraft in FY 1981. The FY 1982 Budget request again ignored the need to accelerate this modernization and requested only 15 such kits. However, both the House and Senate recognized the need to maintain the momentum provided by the 96th Congress and authorized the modification

of 36 P3-A/B aircraft for FY 1982. However, unbelievably, the entire TACNAVMOD package was deleted by the Conference Committee as a result of the aforementioned Administration insistence. To compound matters, there are no modifications requested in the FY 1983 budget.

It is absolutely essential that the previous momentum be regained so that these Naval Reserve aircraft will possess the necessary mission capability upon mobilization. This is doubly true now since not only was an entire year of this vital program lost in FY 1980, but now another year has been lost because of FY 1982 budget action.

A total of 71 P3-A/B aircraft remain outside the modernization program. Originally, ROA did not believe it necessary to modify all of these aircraft since the on-going active Navy P3C procurement program would result in a steady flow of modified P3Bs to the Naval Reserve and up to 29 P3-A/Bs could be phased out without modification. However, the current Navy proposal to effect a fifty-seven percent slow-down in P3C procurement over the next several years drastically alters this conclusion. Accordingly, ROA strongly recommends authorization of 36 TACNAVMOD kits in FY 1983 and further recommends that the remaining 35 be authorized in FY 1984.

Last year, we enthusiastically supported the initiative of the Senate which recommended procurement authorization of two new P3C ASW Patrol Aircraft for the Naval Reserve. Like almost all other initiatives for the Naval Reserve, these aircraft also fell victim to Conference Committee action. At the time we applauded the step as a necessary one towards the absolutely essential goal of horizontal equipment integration in the Active and Reserve Components. However, the aforementioned active force P3C procurement slow-down puts last year's Senate initiative in a much more urgent light.

The P3C is the primary ASW weapons system in the inventory. We must maintain a higher rate of procurement than is now requested

if we are to meet the Soviet submarine force threat for the forseeable future. Procurement of new P3C aircraft for the Naval Reserve will: (1) maintain the desired level of cost-effective Reserve contribution to the Maritime Patrol Force; (2) commence Reserve equipment moderization which is essential for long-term mission effectiveness; and (3) provide necessary training for Reserve flight crew and maintenance personnel who mobilize to active P3C squadrons. Therefore, ROA strongly recommends that procurement of three new P3C aircraft (a detachment) be authorized for the Naval Reserve in FY 1983.

The need to upgrade and modernize Reserve equipment encompasses the entire spectrum of Reserve Missions. However, it is particularly critical in the Naval Reserve Carrier Air Wings. The capability of these Reserve Air Wings is unquesticned and has been constantly demcnstrated. However, they are flying rapidly aging aircraft and the compatabilicy gap between these aircraft and those flown in the fleet grows wider at an alarming rate. This is particularly significant because the aircraft carriers to which these Air Wings would mobilize are becoming increasingly more specialized in their intermediate maintenance systems. Accordingly, there would be neither spare parts nor test-bench equipment on board to support the newly arrived Reserve aircraft. Greater compatability between Reserve and Fleet aircraft must be achieved.

The time honored Navy practice of "hand-me-down" equipment for the Naval Reserve may have been effective at one time; but continuation of this practice has driven the Naval Air Reserve, in particular, almost to ineffective obsolescense. This fact has now been recognized by both the Secretary of the Navy and the CNO. They have publically renounced the doctrine of vertical integration and announced commencement this year of horizontial integration. The Navy intends to modernize the Reserve Tactical Air Squadrons as early as possible with the introduction of F/A-18 and A6E aircraft. ROA applauds this initiative and strongly urges the Congress to support the Navy in this long overdue and most essential effort. For several

years, new production aircraft have been received in the Air National Guard and the Air Force Reserve. The Naval Air Reserve can afford no less.

ROA applauds and supports the initiative of the Naval Reserve Association that Congress approve the immediate commencement of the horizontal integration plan by authorizing the procurement of eight A6E medium attack aircraft for the Naval Reserve in FY 1983.

MARINE CORPS RESERVE

The material readiness of the Marine Corps Reserve 4th Division/Wing Team is a matter of major concern. They simply don't have the necessary equipment, repair parts, consumables, etc. which they must have on mobilization. These kinds of items are always subject to quick deletion or reduction during the budget process because such action results in immediate cost savings. An already unsatisfactory situation was worsened even more by a ten to twelve percent reduction of these stocks to support the RDJTF Near Term Prepositioning Ships program. Unfortunately, the proposed administration budget does little to reduce the magnitude of this problem. The current shortfall is $684.2 million with a projected reduction to $653.5 million during FY 1982. The FY 1983 budget would only reduce the shortfall to $612.5 million. In fact, by FY 1987, the shortfall would still be $231.7 million. That figure is probably optimistic since experience indicates that matters of perceived higher priority continually arise and funds planned to reduce the stock shortage shortfall is diverted elsewhere.

Without an immediate effort to significantly reduce these shortages, the ability of the Marine Corps Reserve to perform effectively on mobilization is seriously in doubt and sustainability is out of the question. Accordingly, ROA strongly recommends that Congress take action during FY 1983 to rapidly accelerate the elimination of these shortages with a goal of total elimination by the end of FY 1985.

ROA strongly supports Marine Corps efforts to modernize the Reserve Ground Combat Forces. Current planning calls for the introduction over the next five years of the Mark 19 heavy machine gun; the Mark 198 howitzer; the lightweight 60mm mortar; the shoulder launched multi-purpose assault weapon (SMAW); and the high mobility multi-wheeled vehicle (HMMWV). We urge Congress to support these efforts and expedite this modernization process to the maximum extent feasible.

Much of what I stated earlier about the Naval Air Reserve applies equally to the Marine Air Reserve. The 4th Marine Air Wing is severely limited in its capability to augment and reinforce the active forces due to aging aircraft, aircraft shortages, incompatibility between active and Reserve aircraft and block obsolescence. Many Marine Air Reserve squadrons deploy to aircraft carriers upon mobilization. The Marine Reserve aircraft would suffer the same lack of equipment support as would the Naval Reserve aircraft for the same reasons. Here again, we must start moving toward new procurement of identical equipment for both the Reserve and Active Duty Marine Corps.

As in the Navy, introduction of F/A-18 aircraft into the Marine Air Reserve should commence as soon as possible to replace aging and incompatible F-4s. The AV-8B Harrier should be procured for both active and Reserve Squadrons, replacing obsolete A-4E/Fs currently in the Reserve.

Congress has previously directed establishment of two Marine Air Reserve KC-130 aerial refueler/transport squadrons and further directed expedited procurement for this purpose. 4 KC-130 aircraft were funded for the Marine Air Wing as add-ons by the FY 1982 Defense Appropriations Conference Committee. None are requested in the FY 1983 budget, therefore still leaving a total of 17 KC-130s to be procured to meet the Congressional mandate. ROA recommends authorization to procure four additional KC-130 aircraft for the Marine Air Reserve in FY 1983.

While there is a Marine Corps-wide critical shortage in AH-1 attack helicopters, the Reserve squadron only possesses 8 of the 24 aircraft authorized. Current planning will bring the Reserve squadron to its authorized strength, but with aging aircraft. The urgent need is to increase the helicopter anti-armor capability to counter large numbers of mechanized and armored units which will be encountered on a high threat battlefield. Only the AH-1T (TOW) has an anti-tank capability. This is an ideal mission for the Reserve as the manpower, airfield, and support facilities are available and the AH-1T requires 50 percent less maintenance than the aging AH-1J planned for the Reserve. Accordingly, ROA recommends that procurement of AH-1T helicopters begin immediately for the Marine Air Reserve and that the entire twenty-four aircraft Reserve Squadron be equipped with this helicopter as soon as feasible.

The Marine Corps has developed long range plans to upgrade the capabilities of the Marine Air Wing. The intent of these plans obviously is laudable. However, in almost all cases, they are far in the future and depend on too many variables. ROA strongly urges the Congress to immediately commence authorization and funding for this long overdue moderization program.

AIR FORCE

The Air Force Reserve continues to provide the Air Force with day to day mission support, as well as wartime augmentation. In FY 1981 the AFR performed a full spectrum of meaningful missions, from airlifting more than 86,000 patients, to supporting the Space Shuttle mission, to officially saving 45 lives in rescue and recovery efforts. With the exception of five units converting to newer aircraft, all AFR units are combat ready.

Exercise CONDOR REDOUBT 81, this past summer, proved that all Air Force Reserve units can be mobilized in 24 hours and deployed within 72 hours. The key to this superb state of readiness is meaninful missions, realistic training, and modern equipment. The first two items are well in hand; today I would like to address the third, modern equipment.

While much progress has been made in providing the Air Force Reserve with more modern aircraft, many problems still remain. The modernization of the Air Force Reserve's equipment must be looked at in the context of the modernization of the entire Air Force, since both the active and Reserve forces share the problems of block obsolescence and high operating costs of older aircraft. We ask, however, in looking at the force structure mix that the economies associated with Reserve Force equippage be considered. For example, the Air Reserve Forces provide approximately one-third of the total Air Force flying mission capability with only twenty-two percent of the military personnel and seven percent of the military personnel dollars.

We appreciate that Congress has recognized the need for modern tactical airlift aircraft in the Air Reserve Forces by adding 38 C-130H aircraft to the DOD budget since 1978. However, only six of these aircraft have gone to the Air Force Reserve. Even these six are two short of the number needed to bring the receiving unit up to minimum strength.

A systematic program for replacing the seven C-130A model units in the Air Force Reserve should be established. The average C-130A aircraft in the Reserve is just under twenty-five years old. Without a replacement program now, we will fact a crisis in future years. In view of the higher aircraft utilization rate in the active force, we suggest that C-130H aircraft be procured for the active force, with C-130E's being transferred to the Air Force Reserve.

In the tactical fighter mission, the Air Force Reserve is building from eight squadrons in FY 1981 to ten squadrons in FY 1983. Five of these units will be equipped with F-4 aircraft, four with A-10's and one with F-105's. The F-105 unit is programmed to receive F-16's in FY 1984.

While the F-4's are new to the Air Force Reserve, they are old aircraft. In fact, the F-4's replacing the F-105's at Carswell AFB average 4,620 hours of airframe time compared to 4,460 for the units' F-105's. The average age of the Air Force Reserve F-4's exceeds twelve years.

The cost of maintaining and operating these aircraft is considerably higher than for the F-16. For example, the fuel cost for an active force F-16 squadron is approximately $5 million per year less than for an F-4 unit. Total operations and support costs are almost 22 percent less for an F-16 equipped wing compared to an F-4.

As with the C-130A, a comprehensive program for the modernization of the Air Reserve Force fighters is necessary. General Creech has testified that, as presently programmed, TAC will lose more fighters through attrition, than it will procure. Obviously, the shortfall in first line combat aircraft will continue to increase unless additional new aircraft are procured for the total force, active and reserve. It is estimated that the procurement cost per Air Force Reserve F-16 squadron would average $300 million in 1982 dollars.

A program to modernize the total fighter force should include full equippage of Reserve Force squadrons with twenty-four aircraft rather then eighteen. Total force structure can be increased with minimal overhead increases by bringing Air Force Reserve squadrons to full strength. This principal also applies to the tactical airlift force where many units could easily handle an increase in authorized and assigned aircraft.

In summary, the Air Force Reserve's wartime mission is expanding. With your continued support in providing modern equipment, the Air Force Reserve will continue to maintain its superb readiness and combat capability.

CONCLUSION

This concludes my remarks. Thank you for the opportunity to appear before this committee.

Mr. BENNETT. I think our country is lucky to have a person like you devoting the time that you do and those behind you. It is a fine organization working for a strong national defense. I think your statement is clear and I will not ask any questions myself.

Mrs. Holt.

Mrs. HOLT. I have no questions. You see the job we have laid out for us. We are going to have a tough time this year, but you know how we feel about the great job the Reserve performs for the country. It has always been a puzzle to me why we don't recognize how cost effective it is and put more of our efforts in that direction. We will do the very best we can.

General ROBERTS. I can assure you, Mrs. Holt, without your help we would be in worse shape than we are right now. No question about that. As I used to say, we had to use the Congress for our damage control party.

Mr. BENNETT. Thank you very much.

This afternoon at 2 o'clock we will hear from people in the administration who will respond to some of the questions that are in our minds. So we will adjourn until 2 o'clock.

[Whereupon, at 11:20 a.m., the subcommittee adjourned, to reconvene at 2 p.m., the same day on other business.]

AFTERNOON SESSION

Mr. STRATTON. The subcommittee will come to order.

This afternoon we are going to continue our hearings on the Reserve components of the Armed Forces with testimony from the Department of Defense witnesses responsible for Guard and Reserve matters. We have in all, seven witnesses to hear, but to facilitate the hearing I am going to ask Dr. Philbin, Deputy Assistant Secretary of Defense for Reserve Affairs, to lead off and then be followed by witnesses from the Army, the Air Force, the Navy, and the Marine Corps.

Since we have so many witnesses I think it would be best if members withhold their questions until all the witnesses have had a chance to make their oral statements, and without objection all of the prepared statements will be entered into the record.

Before we proceed, Dr. Philbin, who is the head of the National Guard Bureau?

Dr. PHILBIN. That is Lieutenant General Weber, sir.

Mr. STRATTON. Isn't he listed here as one of the witnesses?

General WALKER. Sir, I am here representing the Army National Guard. I am Director of the Army Guard and also I have the Director of the Air National Guard here.

Dr. PHILBIN. General Weber is not listed on the witness list.

Mr. STRATTON. I think we should get him because he is the top guy and we are going to have a lot of questions to ask. I think we are going to have to go to the top. We will be in session for a while, so he will have time to make it over here.

General WALKER. Sir, General Weber is out of town this afternoon.

Mr. STRATTON. How can we conduct a hearing on the National Guard without having the head of the National Guard Bureau here?

General WALKER. I hope, sir, that we will be able to speak for the two components, the Army and Air National Guard, and I think we speak for General Weber, without doubt.

Mr. STRATTON. It is the National Guard Bureau that we are always focusing in on. I don't like to have somebody who is not the top guy available to handle this. If he is just a figurehead and you two gentlemen make all the decisions, then that is all right, but that isn't the way I thought the Pentagon ran. He is a lieutenant general, is he not?

General WALKER. That is correct.

Mr. STRATTON. They have a little more status than two stars.

We had some interesting testimony this morning that raised a number of questions in the minds of members, and this is an opportunity to have those questions answered.

So, Dr. Philbin, will you proceed with your testimony?

STATEMENT OF DR. EDWARD J. PHILBIN, DEPUTY ASSISTANT SECRETARY FOR RESERVE AFFAIRS, DEPARTMENT OF DEFENSE

Dr. PHILBIN. Yes, sir, Mr. Chairman.

Mr. Chairman, and members of the subcommittee, I appreciate the opportunity to appear before you today to address the Guard and Reserve equipment issue. If we are serious about the employment of Reserve component forces for deterrence and national defense—and I cannot conceive of a believable military posture that does not make full use of their capabilities—then the proper equipping of these units is a matter of profound importance.

As I am sure you are aware, our Reserve components have made remarkable strides in alleviating their personnel deficiencies. In both the Selected Reserve and in the full-time support areas, we are attracting the number and quality of men and women that we will need to operate and maintain the machinery of modern warfare. The management of the Individual Ready Reserve and the Inactive National Guard is improving, and there are initiatives forthcoming which we believe will increase the personnel strengths in that vital category as well.

Unfortunately, we have not been able to move at the same pace in our efforts to provide adequate quantities of modern equipment to our Guard and Reserve Forces. The lack of headway in this matter is a function, at least in part, of the large amount of money required to fill equipment deficiencies and the far greater amount required to modernize the force. The $17-billion figure that many of you have heard deals only with filling out equipment shortages and scarcely addresses modernization at all.

The modernization issue is one that affects both the Active and Reserve Forces—and there are simply not enough dollars in the defense budget for immediate procurement of modern weapons systems for the total force. In spite of significant overall growth in fiscal year 1982 and fiscal year 1983 procurement the problem remains.

The Defense Department's policy in this regard dictates that equipment will be distributed on a "First to Fight" basis. I support that policy and am doing my best to see that it is fully implemented. The tremendous help that Congress in general and the House

Armed Services Committee in particular have provided the Reserve components is well recognized and deeply appreciated by me and all who believe that a true total force is both economically and militarily the only answer to our national defense needs.

I solicit your continued support in this vital area. I request that the committee receive the statements of the Guard and Reserve Chiefs who have accompanied me today, following which we will attempt to answer any questions you may have.

WRITTEN STATEMENT OF DR. EDWARD J. PHILBIN

Mr. Chairman, members of the subcommittee, I thank you for this opportunity to testify on the status of the Guard and Reserve forces of the United States, the seven components of which constitute a substantial and indispensable part of our national defense. Despite the all too obvious economic and geopolitical realities that we face today, there are still many in this country who fail to recognize just how critical these Reserve Components are to our military deterrence credibility and, should a conflict break out, our national survival in any type of sustained combat.

In the ten months that I have held this appointment I have had a number of opportunities to speak to members of Congress as well as to many groups and individuals in and cut of government. My message to you is as it has been to all others in the past, that our Guard and Reserve forces constitute a tremendous capability that exists and is employable today. They are not, as some would have it, a repository for cast off people and equipment, although the latter is a major source of concern. The Guard and Reserve units of the 1980's are adjunct forces, fully professional, totally integrated and completely involved with the defense of this country along with their active duty counterparts. In today's economy they provide the strength in numbers and the depth in technical expertise that we cannot afford to maintain as a standing force. The costs associated with manning, equipping and training the Reserve Components, as great as they are, are a bargain compared to what it would cost to maintain similar capabilities within the active forces. If these Reserve forces and the skills they represent are not needed then it is an inexcusable waste of the country's resources to attempt to maintain them. However, I have no doubt that to satisfy the requirements of our contingency plans and to present a credible deterrence to out potential adversaries, we not only need what we have in the Guard and Reserve today, but a great deal more as well.

Of the three essential ingredients that comprise a capable fighting force, personnel, equipment and training, the equipment element is the most difficult one to satisfy within our society. Without understating our personnel and training problems it is accurate to state that we possess a large, skilled manpower pool that can be called upon to fulfill our military personnel needs if circumstances dictate. The education and exposure to technology that is characteristic of American youth makes the training of these individuals less of a problem than it would be in underdeveloped societies. However, the acquisition of the proper equipment to meet the current threat requires large amounts of money, dedicated industrial resources and long lead times. To satisfy just the shortage in Reserve Component equipment is a major task; to both fill the shortages and modernize as well is a massive undertaking, the cost of which is obviously very great.

The issue of shortages, incompatibility, obsolescence and nondeployability highlight the equipment posture of the Reserve forces. While shortages are a reflection of the equipment problems in the total force that have developed over the years, the issues of incompatibility and nondeployability are closely tied to modernization.

Historically Guard and Reserve forces have operated with equipment that has been replaced as outmoded or declared as excess by the Active Components. This process has resulted in block obsolescence to such a degree in some cases that entire communities or models of hardware have "died" in the Reserve forces due to aging, lack of spare parts, lack of support equipment, and lack of a plan for replacement.

Other problems associated with the process of equipment "fall out" to the Reserve Components are incompatibility between Active and Reserve forces major end items and support equipment and Reserve Component hardware that is not combat serviceable or even deployable. Such shortcomings further denigrate Reserve readiness by inhibiting training, penalizing the combat capability of the units affected, increasing the cost and complexity of maintenance and, in come cases, by presenting safety hazards as well. A less obvious consequence of these equipment deficiencies is the negative effect they have on personnel recruiting and retention.

Resolution of these matters would not be easy in an unconstrained fiscal environment. What has taken years to evolve cannot be reversed overnight. But there are measures which can be taken to alleviate at least some of the problems.

Unitary buys of new weapons systems that will satisfy the needs of both the Active and Reserve forces are the best solution to future problems of incompatibility. Multi-year procurement contracts offer another potential for easing equipment shortfalls simply by getting more for the dollars spent. Such a process enables early commitment to the full acquisition of a given system as opposed to a series of incremental contracts over time. Although this method of procurement requires substantially more funding at the beginning of an acquisition cycle, these costs are more than recovered through "unitary buy" production and stimulated competitive bidding.

All of these efforts, helpful as they may be, will not solve the problem. The fact remains that today we simply cannot afford the dollars needed to fully and simultaneously correct all the equipment deficiencies of the Reserve as well as the Active Components. Therefore, the key is effective management—the judicious application of scarce resources to meet the most urgent requirements first. We have a policy in OSD that the units which fight first will be the first to receive the required resources. This policy requires complete and uniform enforcement. The new annual Reserve Equipment Report to the Congress represents a major step toward assuring compliance throughout the Department. Procurement is generally based on a Service's total requirements: active, reserve, prepositioned stocks, reserve stocks, maintenance floats, etc. The problems frequently arise during the distribution phase, usually at least two years after the dollars are committed to procurement. Previously we have had no audit trail to ensure that the requirements on which procurement is based are, in fact, filled during distribution. The report now provides us with a new tool to analyze distribution.

The Reserve Equipment Report is not in its final form. My staff is working with the Services to develop additional recommended modifications. As a minimum, the equipment report needs to be automated, and we feel there needs to be an order of priority established for the listing of items. The content may be expanded. For example, readiness intensive equipment items bought through non-procurement appropriations may be suitable for inclusion.

Notwithstanding current deficiencies, the report is already a valuable tool. We are now able to track those items specifically procured at Congressional direction and we can begin to see some modernization introduced into the Reserve Components. In spite of this indication of progress, the overall equipment posture remains bleak. Procurement often fails to keep pace with requirements. As an example, the inventory of 5-ton trucks, now considered a critical shortfall item, will be increased in the Army National Guard and Army Reserve over the 4-year period fiscal year 1982 to fiscal year 1985 by 1808 trucks. But during the same period, due to increasing requirements, the shortfall will grow from 2,918 in fiscal year 1982 to 3,251 in fiscal year 1985. The value of the equipment report lies in the visibility it is giving to such problems.

I fully realize that funding constraints imposed by finite resources are a reality with which all the services must contend. Satisfaction of Reserve Component requirements, when the equipment of the Active Components is in desperate need of replacement and modernization, may appear to be an irreconcilable problem. I nevertheless contend that if the Total Force is to be a reality and the Guard and Reserve forces are to be relied upon to fulfill their everincreasing wartime responsibilities, then the fiscal strategies and the policies for equipment procurement, modernization and distribution must recognize that need.

Continual management attention to the status of Reserve equipment and the procurement and distribution actions taken by the Military services is an essential ingredient in overcoming the equipment shortages. The equipment report represents a positive step toward correcting the existing problem but the ultimate solution will require fully dedicated effort by the Services, Department of Defense, Congress and the industrial capacity of the country. The problem is of that magnitude, but I believe the need is commensurate with the effort required.

It is essential for all of us to understand that it is fatally incorrect to believe that, if the Reserves are ill-equipped, the Regulars will simply fight alone. This nation's present defense commitments are enormous and cannot be met without a coherent Total Force within which there is an inherent and profound interdependence of Regular and Reserve. In today's world, if the Reserves are ill-equipped; then, in crucial mission categories, the Regulars either will be unable to fight at all—or they will fight and lose.

I wish to thank you for your assistance and your interest in the Reserve forces of our nation. It is my belief that a strong Guard and Reserve for our Regular forces represents the best means of maintaining a believable deterrence and an effective combat capability should we be required to employ them in battle. I ask your continued support toward achieving that end.

Dr. PHILBIN. Sir, If I may, at his request I would ask Admiral Palmer to enter his statement first.

Mr. STRATTON. Admiral Palmer, if you have a statement that will be entered in the record.

Do you want to proceed on your own or do you want to read the statement?

Admiral PALMER. I have a short summary, sir, if I may.

Mr. STRATTON. Go ahead.

STATEMENT OF REAR ADM. FREDERICK F. PALMER, CHIEF OF NAVAL RESERVE

Admiral PALMER. Mr. Chairman and members of the committee, it is a distinct pleasure to make my first appearance before this committee to describe procurement of equipment for the Naval Reserve.

The Naval Reserve is integrated fully into the Navy's structure and ranges from 100 percent of the CONUS-based logistic airlift to less than 10 percent of the amphibious warfare ships. Much of the Naval Reserve is not dependent on its own equipment for warfighting capability since many Reserve units augment Active Navy units upon mobilization.

As a general rule new aircraft procurement programs have been sized to fleet requirements and have not included follow-on production for Reserve modernization. Therefore, Naval Reserve Force squadrons are equipped almost exclusively with aircraft that have migrated to the Naval Reserve as a result of regular force modernization programs. The exceptions are:

Twelve C-9B aircraft which were new or practically new when transferred to the Naval Reserve along with the CONUS transport mission in the 1975-77 period. Since that time, Congress has authorized the procurement of three additional C-9B's specifically for assignment to the Naval Reserve.

The ongoing E-2C procurement program includes the Reserve squadrons. Transition of one Reserve VAW squadron to the new aircarft is expected in fiscal year 1984 and the second squadron in fiscal year 1988.

The SH-2F procurement program also includes Reserve requirements. Transition to these newer LAMPS MK-1 aircraft is expected in the fiscal year 1984-85 timeframe.

The Navy will soon begin a shift from vertical integration of our aircraft—the practice of putting older aircraft models in the Reserve as we phase newer ones into the fleet—toward horizontal integration of the Naval Air Reserve into the total force.

Eventually we hope to have identical aircraft or aircraft so similar that the maintenance and maintenance ability and manning will be exactly the same for the Reserve and Active Force.

Recent surface Reserve initiatives include the implementation of an ASW frigate force to replace the obsolete FRAM DD's and expand this mission in the Naval Reserve. The Navy is also plan-

93-273 O—82——73

ning on replacing the obsolescent ocean minesweepers that are currently in the Naval Reserve with a new class of minesweeper which has significantly increased capabilities.

I shall be happy to respond to any question or provide any additional information you may desire.

Written Statement of Rear Adm. Frederick F. Palmer

Mr. Chairman and members of the Committee, it is my pleasure to appear before this committee today to describe the current status of the Naval Reserve and present our program for fiscal year 1983.

This is my fourth opportunity to report on the status of the Naval Reserve and it is a distinct pleasure to report continuing improvement. No small part of the credit for our progress is the interest and support provided by the Congress.

CURRENT STATUS

Improvements in the Naval Reserve cover the full spectrum of Selected Reserve strength, equipment modernization, readiness and training.

SELECTED RESERVE STRENGTH

We were able to maintain our Selected Reserve strength within one half a percent of our authorized level of 87,000 and ended fiscal year 1981 with 87,599 personnel on board. This stability enabled us to continue our program of increasing the match between specific billet requirements and the capabilities of the individual Selected Reservist.

The first quarter of fiscal year 1982 has also been a period of stable strength for the Naval Reserve during which we achieved a major milestone with the endorsement of the Navy's Manpower Mobilization System (NAMMOS) in the report to the House Armed Services Committee by the Office of the Secretary of Defense. The approval of the Navy's mobilization manpower determination system has been essential to full acceptance of our stated Selected Reserve requirements.

Last November we instituted a 30 year career plan for Selected Reserve enlisted personnel, which will not only improve the career and promotion opportunities for mid-grade petty officers, but will also improve the vitality of the force.

Most significantly, we have started to increase our Selected Reserve strength to more closely match the increasing requirements generated by NAMMOS. At the end of December, I issued a challenge to our recruiting force to make a major effort to achieve the significant increase in strength funded by Congress for fiscal year 1982. I emphasized that we must have only quality accessions to meet approved billet requirements. We will maintain personnel quality and improve personnel readiness. A growth of seven thousand Selected Reservists by the end of this fiscal year will be a most difficult task. However, we will utilize all of our assets to achieve this goal.

NRF FRIGATE PROGRAM AND OPERATIONAL CONTROL

On January 16th 1982, the first two FF-1052 class Frigates were transferred into the Naval Reserve Force. The planned transfer of twenty-four modern frigates to the Naval Reserve Force is a major modernization effort. I have entered into written agreements with the type commanders which detail operational scheduling procedures for these ships. Careful planning has been completed to ensure the ships will be utilized to accomplish required training and qualifications of the ship and its Reserve crew. My representatives on both coasts are involved in the operational scheduling process on a continual basis and I have the final approval authority for the schedules. Additionally, a maintenance monitoring activity has been established at Chief of Naval Reserve headquarters to ensure that the maintenance of the frigates is kept up to fleet standards.

IMPROVEMENTS IN READINESS

As a result of improved funding support, the Naval Reserve has achieved significant improvements in readiness. Naval Reserve Construction Battalion unit readiness has made the most dramatic improvement. Other types of surface Reserve hardware units are also on the up-swing. Air Reserve Readiness has remained relatively stable due mainly to equipment problems with both airframes and engines.

Augmenting and sustaining units throughout the Naval Reserve show a modest readiness increase due primarily to improvements in individual qualifications.

IMPROVEMENTS IN TRAINING

Considerable progress has been made in improving the level of training in the Naval Surface Reserve. During the last sixteen months, funding for training equipment has permitted the construction of fourteen Shipboard Simulators (SBS) and five Damage Control Trainers (DCT); establishment of six Naval Reserve Maintenance Activities (NRMF); and the placement of twelve landing craft in the Naval Reserve. These trainers and equipment provide much needed hands-on training for units and personnel to maintain mobilization readiness qualifications. The most significant event in improving Naval Air Reserve training has been the assignment of limited numbers of Reserve air crews to fly fleet aircraft at Jacksonville, Florida. On the west coast a new initiative has Reserve flight crews training in USN Flight Simulators with flights in fleet aircraft planned for this year. Both of the programs are providing training on equipment not previously available to the Naval Air Reserve.

MUTUAL SUPPORT

Our Mutual Support program, where direct assistance to the Navy in the performance of its peacetime mission is provided as an adjunct to mobilization training for the Naval Reservists, continues to expand. Some examples of this type of Reserve training are:

Reserve attack and fighter squadrons provide opposition forces for war-at-sea, fleet air defense, and air-to-air warfare exercises for workup training of deploying battle groups.

Reserve Transport (VR) squadrons are furnishing the entire CONUS fleet logistics support effort and are also augmenting the MED on a regular basis. Also C-9B's are deploying to WESTPAC to support the USS Midway and Pathfinder (Transpac) movements of Navy and Marine TACAIR squadrons.

Reserve VC squadrons presently provide 5,060 hours per year of target and Dissimilar Air Combat Training (DACT) services to fleet units.

During 1981, 11 Reserve VP Squadrons provided 4 aircrews and 3 aircraft for 22 weeks at Bermuda and Lajes and 20 weeks at Kadena to supplement fleet operations.

Naval Reserve Force (NRF) ships and special boat units are fully integrated into fleet exercises and underway training schedules. They also provide assets for special evolutions, such as the Surface Warfare Officers School ship and the annual Great Lake Cruise.

SIMA/YR Reserve units have provided over 64,000 man-days in direct support of ship overhaul and rework projects at the Intermediate Maintenance Level activities.

Supply Systems Command units are assigned projects in stock control, warehousing, traffic management, stock purification, materials identification, and other areas covering the entire spectrum of the Naval Supply Systems Command's tasks and responsibilities.

Reserve Seabee support to active commands was in excess of 30,000 man-days last year.

Public Affairs units provided almost 1,000 man-days of support to active commands in all areas of public affair and public information. In addition, support was provided for the Great Lakes Cruise and the NATO Standing Naval Force visit to New York City in 1981.

FISCAL YEAR 1983 REQUEST

Our request for fiscal year 1983 marks the real beginning of our phased growth and modernization which is essential to improve the Naval Reserve's ability to support an expanding U.S. Navy. Just as the Naval Reserve was reduced in size at the same time as the active duty Navy during the seventies, the Naval Reserve must grow to meet its expanded responsibilities in the eighties.

SELECTED RESERVE STRENGTH

The average paid drill strength of 93,240 requested for fiscal year 1983 represents a significant increase over the authorization for fiscal year 1981, but is essentially the same as our anticipated end strength for fiscal year 1982. What appears to be a significant increase in the number of full-time active duty support personnel is the result of the transfer of the funding and accountability of all the Navy's Training

and Administration of Reserves (TAR) personnel (12,038 end strength) from the Military Personnel, Navy (MPN) to the Reserve Personnel, Navy (RPN) appropriation in fiscal year 1983. This action was the result of Congressional directive. There is some growth within the TAR program, approximately 600, as the result of the continuing expansion to support the new Naval Reserve Frigate Program. We are also continuing to expand our Individual Mobilization Augmentee (IMA) program with a planned growth from an average strength of 320 in fiscal year 1982 to 550 for fiscal year 1983 for those who will only be paid for two weeks annual active duty training (CAT D) and 500 in pay Category A. This growth marks the beginning of a new program to meet expanding medical support requirements. This combination of Selected Reserve unit strength (92,740), full-time active duty support personnel (12,038), and Individual Mobilization Augmentees (500 Category A and 550 Category D) results in a Total Paid Naval Reserve of 105,828 for fiscal year 1983.

NAVAL RESERVE FORCE LEVELS

The NRF Frigate program will continue its expansion to a level of six FF-1052 class Frigates by the end of Fiscal Year 1983. Although two FRAM I Destroyers will remain in the NRF through fiscal year 1983, the only destroyer operating beyond fiscal year 1983 will be the USS *Edson*, a DD-931 class ship which is significantly newer and more combat capable than the destroyers we are decommissioning. A detailed plan outlining the further modernization of this increasingly important part of the NRF will be forwarded to Congress by 1 April 1982.

The four Amphibious Cargo Ships (LKA) assigned to the NRF are acheduled to be returned to the active forces during fiscal year 1983. This will improve the peacetime amphibious lift capability necessary to support the Navy's deployed forces.

Four of the Ocean Minesweepers (MSOs) assigned to the Naval Reserve Force are being retired during fiscal year 1983 due to their age and maintenance problems associated with their unique propulsion systems.

Replacement of the Naval Air Reserve's C-118 aircraft is one of our highest priority items. The Navy has been examining alternatives to determine the least costly method of providing required mobilization airlift capability and support as well as necessary Naval Reserve training. We are presently investigating a lease/purchase plan which could provide as many as twelve used DC-9 aircraft by the end of fiscal year 1983.

The program to improve the capability of our Reserve patrol (VP) aircraft through the procurement of the Tactical-Navigational Modernization (TACNAVMOD) kits has been suspended for fiscal year 1983 as the result of fiscal constraints. The installation of kits procured during previous years continues and will provide a significant increase in capability to these aircraft. Thirty-five percent of Reserve VP aircraft are scheduled to have this fleet-compatible capability by the end of fiscal year 1983.

We are developing plans for a dramatic change in our Reserve Carrier Air Wings. The Navy is adopting a policy of horizontal integration of aircraft into the Naval Reserve where we will have a Reserve squadron for virtually all of our front line fleet aircraft. Discussions are focused on providing F/A-18, A-7E, and A-6E aircraft to the Naval Air Reserve as early as possible.

I strongly support this new philosophy of upgrading the capability of the Naval Air Reserve to make both the units and individuals better qualified and equipped to augment the fleet immediately upon mobilization.

READINESS INITIATIVES

The fiscal year 1983 budget includes funding in three areas which will improve the readiness of all Reserve units: (1) increased formal school training that will enable Reservists to acquire critical skills needed upon mobilization; (2) additional Weekend Away Training (WET) to allow mobilization readiness training at active duty gaining commands; (3) additional Special Active Duty for Training including support for fleet exercises. This will improve unit individual readiness through integration with operating active duty ships and permit attainment of watch station qualifications.

TRAINING INITIATIVES

Three additional Shipboard Simulators and twelve additional Damage Control Trainers are included in the fiscal year 1983 budget request to make them more readily available to Reservists nationwide. Significantly improved training will be achieved by the increases in Weekend Away Training (WET) travel and per diem

funding, additional funding for formal school tours, and sustained funding for participation in fleet exercises. Increases in funding of these three areas should produce dramatic improvements in both unit readiness and training quality.

The programmed changes will result in a Naval Reserve at the end of fiscal year 1983 as outlined below:

MAJOR COMMISSIONED UNITS

35 ships: 3 destroyers (DD); 6 frigates (FF); 18 minesweepers (MSO); 2 tank landing ships (LST); 5 fleet ocean tugs (ATF); 1 salvage ship (ARS);

4 special boat units (numerous craft); 16 mobile inshore undersea warfare (MIUW) units; 17 mobile construction battalions (MCB); 6 cargo handling battalions (CHB); 2 carrier air wings (CVWR); 4 figher squadrons (VF); 6 attack squadrons (VA); 2 light photographic squadrons (VFP); 2 carrier airborne early warning squadrons (VAW); 2 tactical electronic warfare squadrons (VAQ); and 2 aerial refueling squadrons (VAK).

2 patrol wings (Respatwing): 13 patrol squadrons (VP).

1 helicopter wing (Helwing Res): 4 helicopter anti-submarine squadrons (HS); 1 helicopter combat support squadron (HC); 2 helicopter attack (light) squadrons (HAL).

1 tactical support wing (Restacsupwing): 9 fleet logistic support squadrons (VR); and 2 fleet composite squadrons (VC).

The Naval Selected Reserve also contains approximately 2,100 Reinforcing and Sustaining units organized and trained to provide support to the following programs:

Submarine Forces; Mine Forces; Mobile Logistics Support Forces; Surface Combatant Forces; Air Forces; Construction Forces; Amphibious Forces; Marine Corps; Special Warfare Forces; Major Fleet/Force Commands; Unified/Joint/Shore Commands; Support to Allies; Telecommunications; Security Group; Intelligence; Oceanography; Naval Control of Shipping; and Research.

Military Sealift; Bases and Stations; Naval Material Command; Air Systems; Electronics Systems; Facilities Engineering; Sea Systems; Civil Defense; Supply Systems; Merchant Marine; Medical; Training; Personnel System; Public Affairs; Law; Chaplain; and Selective Service.

NAVAL RESERVE APPROPRIATION

The Naval Reserve is supported primarily by two appropriations; the Reserve Personnel, Navy (RPN) and the Operations and Maintenance Naval Reserve (O&MNR) appropriations. First, the Reserve Personnel, Naval appropriation.

RESERVE PERSONNEL, NAVY

The Reserve Personnel, Navy (RPN) appropriation is divided into two budget activities. Budget Authority One provides funding for Unit and Individual Training. Budget Activity Two provides funding for Other Training and Support including the active duty TAR personnel, Reserve Officer Candidate Program, Naval Reserve Officer Training Corps, Armed Forces Health Professions Scholarship Program, and the Navy Junior Reserve Officer Training Corps. The total fiscal year 1983 RPN appropriation request is for $641.3 million, which includes $330.6 million for Budget Activity One and $310.7 million for Budget Activity Two.

The funding request will support an average strength of 105,500 Reservists in paid status, including 11,500 active duty TAR personnel previously funded in the Military Personnel, Navy (MPN) appropriation. The Budget Activity Two request includes $238.4 million transferred from the MPN appropriation to support the cost of active duty TAR personnel. The Budget submission requests an increase of $24.0 million for program growth. This includes $9.5 million for full year funding of the 94,000 fiscal year 1982 End Strength (93,440 Selected Reserve, 352 IMA's and 208 full-time active duty) which was incrementally funded (90,700 man year average) in fiscal year 1982. Cost escalation is $4.0 million.

Travel funding included in the fiscal year 1983 RPN request is all mission essential travel and is based upon actual costs experienced in fiscal year 1981 with a modest allowance for inflation. Barring cuts in the level of travel funding and unforeseen escalation in costs, the requested funding appears adequate to excecute Naval Reserve Training programs for fiscal year 1983.

OPERATION AND MAINTENANCE, NAVY RESERVE

The other major appropriation which supports the Naval Reserve is the Operation and Maintenance, Navy Reserve (O&MNR) appropriation. The Naval Reserve is dependent upon funds in this appropriation for support of mission forces, depot level maintenance, and other support. This includes funds for fuel, intermediate maintenance, repair parts and related support for the operation of the aircraft in both the Naval and Marine Corps Reserve; operating funds and maintenance for Naval Reserve ships; depot level maintenance, and rework of aircraft, engines, and components for Naval Reserve activities under command of the Chief of Naval Reserve.

The funding requested for the O&MNR appropriation for fiscal year 1983 is $653.0 million which is a $81.9 million net increase over the fiscal year 1982 funding level of $571.1 million. The overall program reflects a real program growth of $64.8 million or 11.2 percent and a price growth of $17.1 million. Program growth is primarily for increases in Ship's Maintenance incurred with the introduction of the FF-1052 class frigates.

In addition, we will not be able to meet the Congressional Containment Policy of no further growth above the fiscal year 1978 year-end level of the backlog of nondeferrable Maintenance and Repair which was $20.7 million. Accelerated deterioration of the physical plant will drive our nondeferrable maintenance and repair backlog for fiscal year 1983 to a projected level of $38 million, or about $17 million above the containment level.

The NRF ship steaming time will remain virtually the same as in fiscal year 1981 and as originally planned for fiscal year 1982. While the Fleet Commanders-in-Chief consider 16 days steaming per quarter to be necessary for minimum required readiness, and 21 days to be optimum, funding has constrained steaming to 14 days per ship per quarter. Also, the fiscal year 1983 flying hour program is now at 83 percent of flight hour requirements. This posture is slightly below the historically funded 85 percent of Primary Mission Readiness (PMR) level.

SUMMARY

During the past four years we have seen remarkable progress in the Naval Reserve. Not only have the past proposals for reductions in Selected Reserve strength been revised and the on board strength stabilized permitting increases in quality, we have also made substantial improvements in readiness and mobilization capabilities.

The Navy has developed and implemented an integrated mobilization manpower requirements determination system (NAMMOS) which generates our Selected Reserve requirements. This system has just recently been endorsed by the Office of the Secretary of Defense. We have been able to use this period of stability in strength to organize our structure at the unit level and to steadily improve the match of individual Reservists and their qualifications with the specific requirements of their mobilization billet.

We have greatly improved the quality of training through direct involvement of the active force command to which the individual Reservist or Reserve unit would mobilize. This involvement of active force units in Reserve training has had the additional benefit of direct support to the fleet as a by-product of Reserve training. This Mutual Support program has been warmly received by both the active and Reserve forces.

The Naval Reserve has just embarked on a growth and modernization program to increase our capability to support an expanding Navy. We are:

Increasing the number of qualified Selected Reservists;

Modernizing and expanding our surface warfare capability with the NRF Frigate program;

Actively seeking replacement aircraft for our C-118s; and

Adopting a new policy of horizontal integration of our tactical air forces which will place new aircraft directly into the Naval Air Reserve.

The Naval Reserve is anxious to accept these new and challenging assignments.

I shall be happy to respond to any questions or provide any additional information you may desire.

Mr. STRATTON. Who is next?

STATEMENT OF MAJ. GEN. EMMETT H. WALKER, JR., DIRECTOR, ARMY NATIONAL GUARD, DEPARTMENT OF THE ARMY

General WALKER. Mr. Chairman, I have submitted a statement that I would request be made a part of these proceedings. With your permission I will make a short oral statement.

Mr. STRATTON. Without objection that will be the case. I think we want some informative statements. It doesn't do any good to put the stuff in the record and then have just a couple of sentences which is what the previous witness gave us.

We want to know why you are not doing something about the Reserve Forces, why they are ignored. Why the mandate of Congress has been ignored, and how can you expect to fight a war with the Soviet Union if you don't give the Reserves any equipment?

I think somebody had better start responding to that. We don't want a lot of bland paper here or else we will go into an interrogation here and never mind the printed statements.

Dr. PHILBIN. Mr. Chairman, if you would prefer, we will submit the prepared and spoken statement and go immediately into questioning.

Mr. STRATTON. We have all of them. Here are the leaders of the Reserves and Guard. They have been asked to come up here and tell us what they are doing and why they are doing it and what their problems are. All we get is a bland recitation of nothing. You had better tell us how you are going to fight in the National Guard, General Walker, without any tanks or without anything else.

General WALKER. Is that what you want me to answer right now?

Mr. STRATTON. Yes.

General WALKER. How I am going to fight in the National Guard without any tanks?

Mr. STRATTON. Yes, sir.

General WALKER. Let me start off by saying first of all you recognize that we in the National Guard do not procure any equipment. I want to put that in the record first.

I do have with me this afternoon General Mentrey, General Brown, and General Russo. They are from the Army procurement community and can answer questions on that subject.

How are we going to fight it? I have to tell you today, sir, that, no, we don't have all of our equipment. In fact, I am short about 30 percent of the equipment I am required to have in wartime. We are definitely making some progress on that with the help of the Congress.

Mr. STRATTON. Who is preventing you from getting it?

General WALKER. Sir, we are getting it.

Mr. STRATTON. Isn't Dr. Philbin the fellow who has top responsibility who refused to give you anything?

General WALKER. Not Dr. Philbin. He may be part of it, but he is a big supporter. Let me go into this thing, sir.

Mr. STRATTON. We had the testimony here today that the United States has 16 Regular Army divisions. If I recollect, we have 8 Active Army divisions.

General WALKER. No, sir, 8 Guard divisions and 16 Army divisions.

Mr. STRATTON. That is right, but of the 16 Army divisions most of those are not really fully equipped or fully staffed and they include elements of the National Guard.

General WALKER. That is correct, sir.

Mr. STRATTON. Then on top of that we have eight Guard divisions that are supposed to be part of the total force and the eight Guard divisions don't have any equipment and presumably the elements in the Regular divisions that are staffed by the Guard don't have the proper equipment either.

Here we are facing 170 divisions or more of the Soviet Union. How can we say that we have anything but a completely whole Army, as General Meyer indicated a year ago?

General WALKER. Sir, we are getting equipment and I think maybe you understand the process.

Mr. STRATTON. You said you did not have any equipment.

General WALKER. No, sir, I did not say we didn't have any equipment. I am telling you that my high priority units—the ones that are going to fight first—are the ones the equipment is being issued to. The units to fight first are being equipped first. Seventy percent of my high priority units are deployable to date.

Mr. STRATTON. The point is that at best we have only 24 divisions. That is the entire Army, and eight of them have virtually no equipment, they have no defense, they have no tanks, they have virtually nothing. It is almost as bad as 1940 when we went out there with wooden rifles to demonstrate with. To me this is shocking.

Now we directed the Secretary of Defense and the various services in last year's authorization bill to notify the Secretary of Defense on the 15th of February exactly what equipment was going to be provided to the Guard and the Reserve units. We included a billion dollars of equipment for the Guard and Reserve in the authorization bill last year. When the President came up with his $2 billion cut in September, virtually all that was wiped out.

Now in response to the legislative initiative we get a document up here that says zero, zero is going to be transferred to the Army and the National Guard in 1983.

General WALKER. That is not a correct figure.

Mr. STRATTON. It says procurement is zero.

Mrs. HOLT. Mr. Chairman. could I ask a question along this same line?

Mr. STRATTON. Sure.

Mrs. HOLT. How do you decide who is going to get what? Tell us how you make that decision.

Dr. PHILBIN. Mrs. Holt, may I respond to that?

Mrs. HOLT. Yes.

Dr. PHILBIN. It is not one individual's decision and that is the problem we have in trying to explain the system. It is a very complicated system which starts out with guidance from the Secretary of Defense based on scenarios that face us.

Those are transmitted to the services who then translate that guidance into specific requests for equipment and funds for operations and training. When we get to the procurement area, the pro-

curement that the services believe they need is then prioritized as to where it is going according to a set formula.

Essentially that formula comes up with the first priority units as those which deploy first and will be employed first. That is translated by the Army, for example, into something called the DAMPL, the Department of the Army Materiel Priority List. The problem is that there are so many valid requirements that we simply do not have sufficient dollars to go out and purchase all the equipment that we need to solve all the problems we have inherited.

Therefore, we must prioritize everything.

Mrs. HOLT. Why do the Guard and Reserve always come out at the bottom of the priority list when they are the most cost-effective use of our resources?

Dr. PHILBIN. The reason that occurs is that they are fairly far down on the priority list because they will be deployed and employed later. The early deploying Guard and Reserve units—those that go within 72 hours to 30 days—are very high on the priority list, as General Walker indicated, and they are receiving intensive management attention. They get and have gotten most of the equipment they need. For example, the units assigned to the Rapid Deployment Force—the "A" force—they have all the equipment they will need.

Mr. STRATTON. Which have all the equipment that they need? Just give us the names. I would like to see who they are.

Dr. PHILBIN. Sir, we will submit it for the record.

Mr. STRATTON. Let us have it right now. We are not interested in the record. We are interested in what is going on. You say you have National Guard divisions that are fully equipped, ready to go to the Persian Gulf immediately. What are they?

General WALKER. I will start off with our round-out units.

Mr. STRATTON. Just answer the question.

General WALKER. That is what I am doing. Do you want me to name the roundout? Roundouts go to the 25th, 5th and the 7th Division, among others.

Mr. STRATTON. These are National Guard divisions?

General WALKER. Those are National Guard brigades rounding out Active divisions.

Mr. STRATTON. Fully equipped and ready to go to the Persian Gulf tomorrow?

General WALKER. Give me 1 minute and I will answer it.

Those are round-out brigades to those Active Army divisions. Those brigades are C-1 in equipment, they have the equipment.

Mr. STRATTON. They are brigades, is that right?

General WALKER. They are brigades. They are brigades that round out those divisions.

Mr. STRATTON. They are fully equipped?

General WALKER. They are equipped ready to go. I can't say fully, but as fully as the Army. If the Army has the equipment, they have the equipment.

Mr. STRATTON. I know, but what is the point of having a Rapid Deployment Force if it doesn't have all of the equipment that it needs? That is the point.

General WALKER. I am going to the Rapid Deployment Force next, sir.

Of the Rapid Deployment Force that the Guard has, 84 percent of them are fully equipped.

Mr. STRATTON. Which are the ones that are going into the Rapid Deployment Force?

General WALKER. Sir, I will furnish that list for you for the record.

Mr. STRATTON. We need it because we have just had testimony that you are so badly off that it would take $3.7 billion to provide adequate equipment to the Guard and the Reserve. That to me is a shocking thing. We have no tanks in the New Jersey National Guard. We don't have adequate numbers of people. How can you pretend that you have an Army force of 24 divisions when you simply don't have that?

General WALKER. Sir, you did not give me a chance a minute ago to answer the question you asked me.

Mr. STRATTON. The last question I asked you, you said you would provide it for the record. I don't want it provided for the record. We want it right now.

General WALKER. The list of units, sir. Do you want me to list over 200 to you now? I don't have that list with me.

Mr. STRATTON. I want you to list the divisions that you are going to incorporate into the Rapid Deployment Force.

General WALKER. I have listed the units of the National Guard involved. These are the ones we round out. That is the first category of units I am trying to give you.

The next I will give you is RDF and I told you the condition of that.

Let me say this to you, sir. I haven't said here, and I do not intend to leave this impression with you, that the National Guard has got all it needs. It doesn't.

Mr. STRATTON. What have you done about it, General?

General WALKER. We have presented to the Army, to the Army procurement people, and to other Members of the Congress the equipment that the Army has requested—the equipment we are short of and need and people are aware of. There is a tremendous list.

Mr. STRATTON. Where is the list? You haven't presented it to us and that is the reason we have you up here. We want to know what you have requested. We have $3.7 billion of shortages here. I want to know how the head of the National Guard Bureau could sit over there in the Pentagon when we are facing a serious threat from the Soviet Union and nothing is done about providing the equipment that is needed tomorrow.

How long are the Russians going to wait for us to get these divisions equipped? Do you have that information? Everybody assumes that we have all the time in the world. If I was the head of the National Guard Bureau and you were in the bad shape that General Greenlief says you are in, I think I would raise a little hell over in the Pentagon. All I can do is raise hell here.

General WALKER. You don't think that I have said anything?

Mr. STRATTON. I want to see on paper who it went to. If it goes to the Chief of Staff or the Chairman of the Joint Chiefs, then we will bring him in and find out what the hell is going on. We can't sit here and have the American people think that they can sleep at

night because the National Guard is awake when they don't even have a pistol to protect themselves. It is not funny.

General WALKER. I did not mean to be funny, sir. I understand exactly what you are saying.

Mr. WHITE. You said these round-out brigades are fully equipped. Is that fully equipped with the same equipment that the Active Army Forces have?

General WALKER. No sir, not at this time. But this summer, for example, the first Army National Guard round-out brigade will start receiving the same modernized equipment that their active division has. Other than that, they have generally the same equipment.

Mr. STRATTON. The brigade commander has helicopters available?

General WALKER. That is correct.

Mr. STRATTON. Under his control. Do you have the AH-1S helicopters?

General WALKER. No, sir.

Mr. STRATTON. So they are not fully equipped with modern equipment?

General WALKER. Wait a minute. The brigade is not authorized any attack helicopters.

Mr. STRATTON. What do you have in the way of air defense equipment?

General WALKER. I have eight battalions of the Duster weapon, which is a 25- to 30-year-old system.

Mr. STRATTON. Within the brigade units individual teams are authorized air defense weapons, are they not?

General WALKER. That is right.

Mr. STRATTON. Stingers and Dragons, do you have those?

General WALKER. We do not have them.

Mr. STRATTON. So you do not have all the equipment that the Active Force units do have. You simply have all, or whatever it is, of the substitute items at the present time?

General WALKER. I said to you earlier that I have all that the Army has to issue to us.

Mr. STRATTON. It is not the same equivalent capability as the Active Force brigade in terms of equipment?

General WALKER. If you get down to 100 percent of it that would be the correct answer, yes, sir.

Mr. STRATTON. Your testimony, then General, is that these round-out brigades which are on immediate call in the event of an emergency, if I understand it, that these do not have the same equipment as the remainder of the active division, is that correct?

General WALKER. Not 100 percent, sir. As I say, one good example is air defense.

Mr. STRATTON. How are we going to fight a division if part of the division has one kind of equipment and the other part has another kind?

Mr. WHITE. At the present they are equipped with M-48A5 tanks?

General WALKER. The M-60.

Mr. WHITE. They have M-60's now?

General WALKER. Yes, and they will be getting the M-60A3, sir. Now what you are referring to—we have many M-48 tanks in the National Guard. There is no doubt about that.

Mr. WHITE. I am curious because the equipment report shown to us here for the National Guard shows inventory—I take that back.

General WALKER. Yes, sir, we have a mixed fleet out there.

Mrs. HOLT. I have been here 10 years now and we have always felt very strongly that we weren't doing the right thing by the Guard and Reserve. We feel that this is part of our total force that is being ill equipped, ill manned, ill trained, and we would like to do something about it. We have never been able to get the Defense Department to acknowledge the fact.

Well, they do acknowledge it now; they are beginning to pay lip-service to it, but we see no evidence that they are really going to really try to do what we want them to do. It seems to me it is a serious problem and we just want some help in trying to accomplish what we are trying to do here in the committee.

It is ridiculous every year for us to go and add a lot of stuff, I am not expert enough to know how to equip the Guard and Reserve, but I really want to do it. It puts us at a great disadvantage. I think that is the frustration of the chairman as year in and year out we keep saying, tell us how to do it and nobody tells us.

General WALKER. Mrs. Holt, if I may, the report that the chairman mentioned a minute ago—the February 15 report—includes our procurement. In 1982 we will be getting $129 million worth of equipment and in 1983, $316 million. We have averaged getting from the Army about $500 million of equipment yearly.

Mr. STRATTON. That is all hand-down stuff?

General WALKER. It is a mix of new and older equipment, mostly the latter category.

Mr. STRATTON. How do we expect to take out the Soviet divisions with hand-down equipment, supposedly from the world's greatest industrial Nation?

General WALKER. We appreciate the appropriation you added on the Guard last year. We are using those funds this year to procure attack helicopters, self-propelled artillery and command post and personnel carriers, mortar carriers and bridging. All that, sir, is going to add tremendously to us. We are trying to put the money where it means the most to us. What you have done for us has been tremendous.

Mr. STRATTON. We are trying to do more. We recognize that you are not the person responsible, but we are trying to find out exactly where this chain of command goes and why we have neglected this important part of our forces even in spite of the interest which Congress has shown.

I would assume, Mr. Secretary, that as a high-ranking civilian in the Defense Department, Deputy Assistant Secretary, that you are in on the discussions of our contingency plans, is that correct?

Dr. PHILBIN. No, sir, I am not.

Mr. STRATTON. You don't have any input with respect to the contribution of the Guard and Reserve units in our contingency operations?

Dr. PHILBIN. Sir, the Office of the Secretary of Defense does not generate the contingency plans. War planning is a function of the

military services themselves. If you want to know what I am trying to do for the Guard and Reserve, especially with regard to the equipment issue, I work through the Assistant Secretary of Defense for Manpower Reserve Affairs and Logistics. What we have done is identify as best we can what the problem is and attempt within that bureaucratic system to get attention and dollars focused on the particular problem of the Guard and Reserve in the equipment area.

Mr. STRATTON. Who is that, Mr. Korb?

Dr. PHILBIN. Assistant Secretary Korb.

Mr. STRATTON. You go up to him?

Dr. PHILBIN. I report to Dr. Korb.

Mr. STRATTON. You don't know what he does from there, is that right?

Dr. PHILBIN. No, sir. I get constant feedback and we lay our strategy and tactics. I tell you there is no one person in the Pentagon other than the Secretary of Defense who gives an order to fix this or do that because all the requirements outstrip the money available. To solve them we must prioritize and that is a procedure of give and take. What can we buy? How many of this and how many of that?

If it were possible, I would suggest that we go out and buy all the tanks that we need, and I can give you the number that my staff has identified. There just aren't enough dollars.

Mr. STRATTON. We just had a big display in the papers about how the planning experts have reported to the Senate Armed Services Committee, and we expect to get them over here to report to us, that even in the 5-year plan, $1.6 trillion that it is supposed to cost, even in the 5-year plan we still don't have everything that is needed to fill our commitments.

The figure has been variously reported as $750 billion more or $1.2 trillion. Does that figure include the inadequacies of the Reserve and Guard divisions that are actually programed for combat in the event the Rapid Deployment Force is mobilized or the Guard and Reserves are sent to Europe to take care of whatever situation erupts over there?

Dr. PHILBIN. Sir, I can't answer that question in just those terms, but I can tell you that the 5-year program, the plans, programs, and the budget are all set with the Guard and Reserve in mind as part of the total force and as part of the war plans.

Mr. STRATTON. I know, but if they are in mind as part of the total force except that they are in mind today with old tanks, no adequate air defense, and all the other horror stories that we got from General Greenlief, it doesn't do any good.

I am trying to find out who it is that turns this thing down. You say you tell Mr. Korb how terrible the situation is and you tell him you have to have Chaparrals and Cobras and M-1's if you are really going to do your job, then we want to know what happens when he goes to the next level.

It is idiotic for us to pretend that we have an all-force concept and that the Reserve and the Guard are just as ready, just as capable to move into the breech as possible. That is just a lot of baloney. More than that, it is a national scandal.

Dr. PHILBIN. Sir, may I address that question?

Mr. STRATTON. Sure.

Dr. PHILBIN. Dr. Korb will take the information I have gleaned and given to him and it goes into the planning, programing, and budgeting system, where most of the decisions are made by the Defense Resources Board. In that process they allocate the total DOD money available for any particular year. The Army, Navy, and Air Force have their opportunity to recommend how they would prioritize between modernization, readiness, sustainability, and force structure.

OSD does not give orders to the services as to how that is done other than general guidance.

Mrs. HOLT. Is there in that DRB and the POM any new equipment for the Army Guard for this year?

Dr. PHILBIN. There is and it would be contained in greatest detail in that equipment report you have up here. If you are talking about a specific procurement appropriation for the Guard and Reserve, the answer is "No."

Mrs. HOLT. Do you feel the same frustration that we do? You must be over there fighting and saying all the things we are saying. Do you feel they completely disregard what you are telling them?

Dr. PHILBIN. No, ma'am. I do not. The problem is that everybody who is a special pleader such as I am has valid requirements.

Mrs. HOLT. You seem to come out on the shortest end of the stick.

Mr. WHITE. As the admiral indicated just a minute ago, they plan to buy F-18's, modern equipment for the Naval Reserve Forces. The Air Force is buying A-10's and F-16's, modern equipment, directly to go into the Guard?

Dr. PHILBIN. Yes, sir.

Mr. WHITE. Yet in the Army I have seen no effort at concurrent equipage. The Navy is buying FFG-7 ships for its forces. How is it that the Air Force and Navy can afford to procure modern equipment of the current vintage production for its Guard and Reserve Forces and the Army cannot afford to update what was there in the Korean war?

Dr. PHILBIN. All I can tell you, sir, is that the moneys allocated to the Navy were examined by the Chief of Naval Operations and Secretary of the Navy and they have made the decision you described. The same thing happened with the Chief of Staff of the Air Force and the Secretary of the Air Force.

The services decide for the most part how they are going to prioritize the money given to them by the Department of Defense within the guidance given by the Department of Defense.

Mr. WHITE. Would you and the Army representatives support concurrent equipage from modern procurement runs?

Dr. PHILBIN. If that were physically possible, I certainly would.

Mr. STRATTON. Mr. Campbell.

Mr. CAMPBELL. Thank you, Mr. Chairman. I have a followup question to what Mrs. Holt was getting at.

In your fiscal year 1984 POM process—maybe you can answer this, General Walker—did you identify any equipment for the Guard and Reserve?

General WALKER. Sir, I am going to refer that to the Army procurement committee right behind me.

STATEMENT OF BRIG. GEN. LOUIS C. MENETREY, DIRECTOR OF REQUIREMENTS, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS

General MENETREY. I am director of requirements in the Office of the Deputy Chief of Staff for Operations and Plans. One of my duties is to recommend the priority for distribution of equipment.

As has been said before, we look upon it as a total force, 24 divisions, et cetera. We try to allocate that on the basis of the war plans, who would most need it in terms of when they would get to the fight. That is our deterrence and I am sure the committee would support that.

Mr. STRATTON. I don't think it was. How much time are you allocating? You say those who are going to get there. If we have 60 or 70 divisions on the NATO line and we have 24 divisions over here, half of which are ill equipped, the fact that they are going to go in later is not going to do much good.

General MENETREY. I agree with you.

Mr. STRATTON. If we don't have those divisions equipped today they are not going to do any good or be available when the balloon goes up unless you have assurances from Mr. Brezhnev he will give you plenty of time to follow the leisurely path of providing this hand-down equipment to the Guard and Reserve Forces.

General MENETREY. I agree with you completely, sir.

Mr. STRATTON. Then what are you doing about it?

General MENETREY. We are distributing the equipment that we can purchase in accordance with the highest priority units, and that priority is generally—although there are other factors—in accordance with when they can get to the fight.

Mr. STRATTON. We are going to designate this stuff to go to the Reserve instead of in hand-down fashion.

General MENETREY. We do also.

Mr. STRATTON. Because this business of prioritizing up at the top level ends up with nothing ever getting down there until it is such bad shape that it is virtually useless against the T-80 tank or anything else.

General MENETREY. Sir, I agree with your statement, but I disagree with the conclusion. Let me give you an example.

Mr. STRATTON. The whole statement was a conclusion, so you can't agree with it and disagree with it at the same time.

General MENETREY. It was a conclusive statement. Let me give you an example. Our current plans indicate that some round-out brigades will get modern equipment well before most active units, to include some forward deployed units. The reason is that it is higher in the priority. It is an RDF unit; it can get to the fight earlier; it is in a ready condition; and it can deploy easily.

That same philosophy is followed throughout the structure. We look upon the total Army, not as Active Army and Reserve components. There are many examples in that regard, sir.

Mr. WHITE. General, if I could ask you, in the report you submitted to us show through fiscal year 1985 delivery period no M-1 tanks going to the Guard.

General MENETREY. That may be, sir. I am not familiar with this report.

Mr. WHITE. Through next year you will have procured 3,789 M-1 tanks.

General MENETREY. I am referring to delivered tanks.

Mr. WHITE. That is that funded delivery period to fiscal year 1984. Is it unreasonable to begin a concurrent equipment program with a 1,000 a year buy?

General MENETREY. No, sir, it is not unreasonable. Such is the case. The concurrent equipping within the priority 24th Division indicates that division gets modern equipment. So will the National Guard units that are associated with that division.

The same philosophy goes throughout—if their deployment schedules are the same as the division. That is often the problem. Most round-out units, however, are in a high state of readiness and will deploy concurrently with the Active component they join.

Mr. WHITE. Thank you, sir.

Mr. STRATTON. I think you are just kidding yourself on this deployment business. I think once we get started they are all going to be needed at once. You are going to find that half of them are just simply not capable.

No M-1's until when? 1985?

Mr. WHITE. This shows through the fiscal year 1985, none.

Mr. STRATTON. That means it will probably be 1990 or 1995 before we get down to the New York State National Guard, for example.

General MENETREY. In open hearings it is difficult to give the exact deployment schedule, but it will be after the time that the high priority units get them. That is a 1984 funded delivery period.

Mr. STRATTON. I don't think the American people realize how perilous our situation actually is.

General MENETREY. That is perhaps true, sir.

WRITTEN STATEMENT OF MAJ. GEN. EMMETT H. WALKER, JR.

INTRODUCTION

As part of the Total Army, the Army National Guard (ARNG) is a key element in the defense of the United States. The citizen-soldier of the ARNG willingly provides his time and effort to be ready should mobilization come. He must have training, equipment, and leadership necessary to help prepare him for whatever his mission may be. The resources provided to the ARNG are applied to this end and this statement will provide an insight as to what has been done in the past and what is necessary this year and in the future. At the onset, it is important to understand that the ARNG must be ready to go to war—today and tomorrow. All ARNG units have valid Total Army mobilization missions and the number of ARNG high priority units is increasing. These units provide essential combat and logistical support needed early in the deployment process. The following sections of this statement will describe the ARNG in the mission areas of organizing, manning, equipping, training, and mobilizing the force—the Army National Guard.

ORGANIZING THE FORCE

On a unit basis, the ARNG provides 33 percent of the combat divisions, nearly 50 percent of the infantry, armor, and field artillery battalions, 57 percent of the armored cavalry regiments, and 25 percent of the combat service support units in the Total Army. Further, the Army National Guard represents approximately 60 percent of the total strength of the Army Reserve Components. There is a continual review of missions and resources within the ARNG to ensure that these resources are organized in the most effective manner. This past year was characterized by organizational changes to selected elements of the ARNG force structure to meet Total Army requirements. Among the most significant was the activation of an additional armor brigade in the Kentucky Army National Guard. This brigade was formed by a consolidation of existing combat and combat support elements, permiting the Army to add combat power at minimum cost and with minimal personnel turbulence. In addition, nuclear, biological, and chemical defense (NBC) companies were added to the 50th Armored Division in New Jersey and the 49th Armored Division in Texas. A combat support aviation company was activated in Hawaii as part of the 29th Infantry Brigade, which is a roundout to the 25th Division. Other activations in the ARNG took place which increased the capability of the Total Army by a medical group headquarters and medical detachment, two ordnance battalion headquarters and eight ordnance companies or detachments, a signal battalion headquarters and two signal companies, six transportation companies and detachments, and four maintenance companies.

In FY 82, the ARNG will continue its structure modernization efforts consistent with Total Army requirements and resource availability. Significant force structure actions programed for FY 82 are the activation of an air traffic control headquarters, a medical battalion headquarters, and an ammunition battalion headquarters with three conventional ammunition companies. Military intelligence aerial surveillance organizations will be reorganized to form a combat electronic warfare intelligence (CEWI) aerial exploitation battalion. Also programmed for activation in FY 82 are a supply and service battalion headquarters, a signal company, a medical clearing company, a military police company, and two engineer detachments, all in Guam.

MANNING THE FORCE

The ARNG has made significant gains since FY 78 when assigned strength declined to a low of 344,000. Reversal of this downward trend occurred late in FY 79 and the upswing has continued into the 1980's. With support from the Congress and the nation, the FY 87 wartime required strength of 453,000 will be reached in FY 86. As of the end of FY 81, the ARNG is 88 percent of wartime required, with a paid strength of 389,009. This includes 38,364 officers and warrant officers and 350,645 enlisted personnel. Aggressive recruiting and retention programs, incentive programs, and flexible enlistment and training options, aided by the state of the economy and the world situation, all contributed to the improvements in manning levels. Central to these successes is the professional Full-Time Recruiting Force working in conjunction with Army National Guard members at every level. The enlistment incentives and improved enlistment options also substantially aided FY 81 recruiting efforts. The split training option, for example, contributed significantly to the increase in accessions of high school seniors. The Full-Time Attrition and Retention Force was activated in FY 81 with the placement in the

States of 79 personnel dedicated to retention. One-hundred seventy-nine additional retention personnel are scheduled to join units in FY 82. These personnel are tasked to reduce losses of individuals prior to expiration of term of service (ETS), the most serious retention problem facing the ARNG today. Details on accessions, attrition, and retention of specific categories of ARNG personnel are included in the following paragraphs.

The ARNG continued the Selected Reserve Incentive Program (SRIP) which started in FY 78. The intent of the program is to increase personnel readiness and to reduce personnel turbulence through longer service commitments for selected units. The program initially consisted of an enlistment bonus, reenlistment bonus, and educational assistance. In FY 81, bonuses for critical skills were added in an effort to increase accessions to shortage skills and those skills essential to unit effectiveness. With this expansion, 75 percent of the enlisted structure is eligible for enlistment bonuses and 63 percent of the enlisted structure is eligible for retention bonuses. In FY 81, the Inactive National Guard (ING) Bonus, the Affiliation Bonus, and loan repayment programs were added. The Affiliation Bonus for prior service active duty personnel with a remaining military service obligation, pays $25 per month for each month of the remaining obligation. The loan repayment program repays certain Federal guaranteed and/or direct student loans. The loans are repaid at a rate of 15 percent or $500 per year, whichever is greater, for each year of satisfactory service for individuals who enlisted, reenlisted, or extended their terms of service. The ING Bonus was terminated at the end of FY 81.

The effects of the incentive programs are evidenced by the greater strength gains in those units and in those skills authorized the incentives. Efforts to increase and expand the Selective Reserve Incentive Program (SRIP) will continue in order to maximize this valuable recruiting and retention tool. Implementation of a $2,000 Enlistment Bonus for critical skills and expansion to other critically short CMFs was accomplished earlier this fiscal year. A prior service bonus is programed for FY 84 in order to capitalize on the available resource of trained personnel. Enlistments for FY 81 totaled 96,436 or 100.7 percent of the programed objective. Concurrently, nonprior service enlistments reached 52,447 reflecting 103.6 percent of the FY 81 nonprior service objective, while prior service enlistments were 43,989 or 97.4 percent of that objective. In addition to exceeding quantity goals, quality objectives are also being met or exceeded. During this past fiscal year, 13.2 percent of ARNG enlistees scored in test category IV, the lowest category allowed to enlist. This is significantly below the Total Army ceiling of no more than 30 percent of accessions in this category. High school graduates and seniors continue to join the Guard at an increasing rate. In FY 81, the recruiting standard of a minimum of 60 percent high school graduates was implemented. During FY 81, 63.7 percent of ARNG nonprior service accessions were high school graduates. This percentage is expected to improve during FY 82.

The officer accessions program has also been successful. At the start of this fiscal year, the total officer strength of the ARNG reached its highest level ever recorded--38,364. The steady increase in officer strength is attributed primarily to the success of ARNG officer recruitment and accession programs. However, the increase also reflects a greater appreciation throughout the country for the vital mission performed by the National Guard and its importance to both State and national interests. Although officer assigned strength is at a record level, this represents only 93.6 percent of that authorized. Continued emphasis on funding present and future officer procurement initiatives is essential to maintain the upward trend.

The ARNG initiated the Army Medical Department (AMEDD) Officer Accession Program in March 1979 to alleviate the critical shortage of health care professionals. At the start of FY 82, AMEDD officer strength was 5,054 or 85 percent of authorized, and physician strength was 620 or 50 percent of authorized. Implementation of the first phase of the ARNG AMEDD Readiness Procurement Force Plan during FY 81 authorized one AMEDD recruiting officer for each of the medical brigades located in California, Mississippi, and Ohio. These officers are dedicated to the recruiting and retention of health care professional personnel. The AMEDD recruiting and retention program will expand the Full-Time Recruiting Force (FTRF) in FY 82 to a total of 32 AMEDD officers and three enlisted personnel. Other AMEDD positions include unlimited overstrength for selected AMEDD personnel, direct appointment, and medical and dental student commissioning in the ARNG.

Innovative basic branch officer procurement programs such as the Simultaneous Membership Program (SMP) and the Early Commissioning Program (ECP) have enhanced the Reserve Officer Training Corps (ROTC) quality and quantity of accesions to the ARNG. During FY 81, approximately 1,200 ROTC graduates were appointed in the ARNG. The

trend is expected to continue with ROTC becoming a principal source of new lieutenants entering the ARNG in the future. The assignment of 100 ARNG officers to ROTC detachments under the Expand the Base (ETB) program and additional funding of ROTC scholarships for the Selected Reserve are significant factors in the current and projected increase in officer accessions through ROTC. ROTC is well on its way to becoming a truly viable source of officer accessions for the Total Army—not just the active force.

Minority strength reflected substantial gains during FY 81. At the end of this past fiscal year, 3,318 officers and warrant officers and 97,061 enlisted personnel, for a total of 100,379 individuals, or 26 percent of assigned strength, were members of minority groups. Female strength in the officer and warrant officer categories increased from 1,357 to 1,653; among enlisted personnel female strength increased from 15,383 to 17,968 during FY 81. Thus, at the end of FY 81, the ARNG included 19,621 or 5.0 percent, female personnel. The ARNG minority accessions objectives remain at achieving minority manning levels at the unit level comparable to the distribution of minorities in the local population.

As strength has increased, so has the requirement for full-time support. The full-time support mission improves unit readiness and provides greater flexibility in meeting varied and changing mission requirements. Full-time support activities accomplish the vital day-to-day missions of the ARNG: command, control, maintenance and other logistical support, and training operations to ensure that the limited time available at unit training assemblies is used in the most productive manner. In FY 83, the full-time support requirement is programed to be 52,159; with only 36,776 personnel projected to be available, there is a shortfall of approximately 30 percent. This shortfall is the result of repeated reductions in civilian end strength and increased requirements due to greater equipment density and complexity, increased unit personnel strength, and increases in the number and type of units in the ARNG force structure.

An issue of continuing concern is that of technician compatibility, wherein technicians who are required to be members of the ARNG as a condition of employment, are assigned to military positions compatible with their technician position. At the end of FY 81, the incompatibility rate for the ARNG was 12 percent. The goal is to reduce this rate across all units to 5 percent by the end of the current fiscal year with no State having more than 15 percent of its technicians in incompatible military positions. These goals are responsive to congressional guidance. Command emphasis and improved management procedures at State level will be necessary to ensure that this goal is met. One action taken at National Guard Bureau level which will enhance this effort is implementation of a policy of granting waivers to compatibility directives only for the purpose of enhancing unit effectiveness. In the past waivers were also granted to allow career advancement of the technician. A monitoring program consisting of periodic reviews of personnel files for compatibility and audits of the individual States has been established to ensure compliance and track progress.

EQUIPPING THE FORCE

To provide the materiel resources necessary to support the ARNG is another major challenge. During FY 81, the status of ARNG equipment was slightly improved. In order to meet full wartime mobilization requirements, the ARNG needed an equipment inventory valued at $11.8 billion. Equipment on hand is valued at $8.1 billion, leaving a shortfall of $3.7 billion from the wartime equipment requirement. In other terms, on hand assets meet 69 percent of the wartime requirement.

It is important to understand that these figures do not represent the cost of providing modern equipment, but rather would provide equipment similar to that presently in ARNG units. The increased funding provided by Congress in the FY 82 appropriation for procurement of howitzers, command post vehicles, bridging, mortar carriers, data processing equipment, 5-ton trucks, and aircraft specifically for the ARNG will make inroads into this shortfall. Additionally, funds to procure 200 M198 155mm towed howitzers dedicated to the ARNG have been identified from Army appropriations.

While most of the equipment on hand in the ARNG is deployable and supportable, some of it is old and significantly less capable than the equipment found in the Active Component. For example, some of the ARNG signal units are equipped with older generation communications equipment that will not fully interface with the newer Army systems. The only air defense capability for the eight ARNG divisions is the 30-year old 40mm "Duster," which has become progressively more difficult to maintain due to age and nonavailability of spare parts. Diagnostic test and maintenance equipment in ARNG maintenance units

are designed to support older equipment and cannot accommodate new systems such as the TOW and the M1 tank. In addition to the old equipment in the ARNG inventory, many items are being carried as authorized substitutes, another area that adversely impacts upon training and would impact upon operational effectiveness in the event of mobilization. As an example, 1/4 ton jeeps are being substituted for TOW antitank weapon system tracked carriers. Improvements in this area can be expected as the ARNG is included in the Army force modernization program. Thirty-eight modernization systems are planned for introduction into the ARNG during FY 84 through FY 88. This number has doubled since last year. Included in these systems is equipment ranging from the M1 tank to personal armor systems for ground troops. Growth in the ARNG force modernization program can be expected to continue with a gradual modernization of many items in the equipment inventory. Looking at the current situation, delays in filling unit equipment shortages and in modernizing assets on hand have severely restricted improvement of materiel readiness, and in some cases, adversely impacted on training effectiveness. This is most significant during joint Active/ARNG exercises where ARNG equipment is incompatible with Active Component equipment. This could have a direct impact on the ability of the ARNG to respond quickly to a national emergency. In the event of war, the ARNG would simply have to fight with the equipment it has on hand, irrespective of age or effectiveness. In addition, deployment of ARNG units with equipment not compatible with that found in the gaining command could cause severe operational and support problems.

The ARNG organizational clothing and equipment program has improved but continues as a major problem area. Procurement from the Army stock fund is the single source for specific unit support items such as chemical defense equipment (CDE), medical field sets, tool and test sets, fire direction sets, winter clothing, and camouflage screens. The adequacy of stock fund support is critical to unit mobilization and deployment readiness. Even with additional funding provided in the FY 82 appropriation, the ARNG clothing and equipment shortages, which totaled over $518 million in FY 81, are not programed to be filled until FY 87. Problems in this area are compounded by rapid cost growth and increased sophistication in authorized items of equipment. Of special concern is chemical defense equipment. The shortages in chemical defense equipment have impact on both training and mobilization readiness. At present about 10 percent of the total requirement of $102 million in chemical defense equipment is on hand or on requisition. The availability of this equipment will improve gradually in the FY 83 to FY 88 timeframe, with priority of issue to early deploying units.

ARNG equipment requirements are included in the Army Acquisition Objective (AAO). Issues from the supply system are made in accordance with established Total Army priorities, ensuring that both mobilization readiness and unit training programs are efficiently supported. Priority for issue of the most modern equipment goes to the highest priority, earliest deploying units. Although significant shortages exist, wherever possible, units are provided with sufficient equipment assets to conduct a meaningful training program, regardless of deployment schedules. Much of the heavy tracked equipment assigned to ARNG units is positioned at designated mobilization and training sites. This equipment is available for ARNG use during inactive duty training and annual training at those locations. The concept of positioning unit equipment at designated mobilization and training sites is cost effective and supports both training and mobilization requirements.

The ARNG is automating its logistics management capability on a limited basis. At present, the eight ARNG divisons, 15 separate combat brigades, and three roundout brigades are operating the Division Logistics System (DLOGS). This automated system uses UNIVAC 1005 equipment which is antiquated and difficult to maintain. The UNIVAC 1005 could not be supported in a deployed environment. Extension of the DLOGS to the four remaining brigades has been deferred indefinitely due to the lack of computer hardware. Looking toward modernization, five nondivisional direct support units have received the new Decentralized Automated Service Support System (DAS3). This system automates routine supply management and provides constant inventory visibility. These systems will be extended to an additional 43 ARNG Direct Support/General Support (DS/GS) units during FY 82 and FY 83. Replacement of the DLOGS UNIVAC 1005 with the DAS3 system is scheduled for completion in FY 87.

Aviation support deserves special mention. The ARNG Aviation Logistics Program has proved its effectiveness by exceeding the Department of the Army operational readiness rate for the past 6 years. This is especially significant when consideration is given to the varied aircraft systems supported by the ARNG maintenance program. At present, the Army National Guard is authorized a total of 2,739 aircraft, including a 10 percent operational readiness float. The bulk of the fleet is comprised of utility, observation, and

attack aircraft. Of the 2,580 aircraft on hand, only 1,822 are first-line aircraft, comparable to those found in the Active Component. For example, of the 409 attack helicopters authorized, only 26 are modernized AH-1S TOW Cobras. The remaining attack aircraft are older aircraft possessing limited mission capability. During FY 81, 13 AH-1S modified "TOW Cobra" attack helicopters were transferred from the Active Component into the ARNG aircraft inventory. In addition, 12 newly produced, fully modernized AH-1S aircraft were received directly from the factory. These 12 aircraft were the first new AH-1S aircraft to be produced for, and issued to, the ARNG. During FY 82, seven additional AH-1S aircraft are scheduled to be transferred from the Active Component. Eight of the ARNG attack helicopter companies and six of the air cavalry troops are projected to have the resources necessary to accomplish mission-related training by the end of FY 83; however, many other units will not have the AH-1S system and must continue to train with nondeployable aircraft. An additional roblem faced by the ARNG is the introduction of new aircraft into the Active Component without introduction of the same equipment into the ARNG. A limited number of new aircraft are required to train ARNG high priority maintenance units to ensure that they can support the AC in the event of mobilization. An initial effort to assist in this area will be the issue of four UH-60s to the ARNG during FY 83. Additionally, as a result of FY 82 congresional action, 12 additional new production AH-1S aircraft and six C-12D aircraft will be procured for the ARNG.

A related issue to equipping the force is that of providing facilities for use by ARNG units. The ARNG operates, through the various States and territories and the District of Columbia, 2,821 armories, 1,635 logistics and maintenance facilities, 270 training sites, and over 200 other facilities. Under the provisions of the United States Code, support for these facilities varies from full Federal funding of training sites to full State funding for armory operation and maintenance. At the start of this fiscal year, there was a federally funded Backlog of Maintenance and Repair (BMAR) amounting to $55.6 million. This was an increase of $11.3 million over FY 81. Funds are programed to reduce BMAR to $15.2 million, the ceiling established by Congress in 1978, by FY 87.

In addition to these maintenance and repair requirements, military construction projects represented a backlog of $740 million in FY 81. This backlog is expected to grow to $800 million by the end of this fiscal year. The principal reasons for this situation are increasing requirements for ranges and construction cost escalation. With construction costs escalating at approximately 10 percent a year, an appropriation of $80 million per year would be required to hold the backlog constant, even without additional projects. The budget request for the FY 82 military construction program was $47 million. Congress added $20.7, million providing a total of $67.7 million for FY 82, which is still much less than the required $80 million. The FY 83 construction request is $51.1 million, or only 65 percent of the FY 82 appropriation, allowing further growth of the construction backlog.

TRAINING THE FORCE

The core of the ARNG training program is the training assembly. Each member of the Guard is scheduled for 48 training assemblies. In addition to these assemblies are a number of innovative, highly productive training programs; these are highlighted in the following paragraphs.

The Active Component/Reserve Component (AC/RC) Partnership Program, which includes all ARNG divisions, separate brigades, armored cavalry regiments, aviation attack helicopter companies, and air cavalry troops was implemented in 1980 to solidify the mutual support relationship already established. The Partnership Program is a year-round effort whereby AC units provide training support, evaluation, and assistance to their designated ARNG partner units. Another program is Affiliation Training which continues to be an outstanding vehicle for improving the readiness of selected ARNG units through dedicated support by AC units. This program is composed of three elements. The first is Roundout, wherein ARNG units are designated to raise AC divisions short units to desired structure. The ARNG has four brigades and six battalions designated as roundout affiliates. The second program, Augmentation, identifies ARNG units which will increase the combat power of AC divisions or brigades that have a standard configuration. The ARNG has five brigades designated as augmentation affiliates. The last program is Mobilization and Deployment Capability Improvement (MDCI). In this program, ARNG units that require dedicated AC assistance to meet mobilization or deployment schedules are affiliated to improve their readiness condition. ARNG units in this category do not deploy with the AC sponsors. The ARNG presently has 39 battalions and 71 company-size units designated as MDCI affiliates. During the past year, this program has been expanded with the addition

of eight ARNG battalions and 55 company/detachment size units. These units were selected because they are scheduled for early deployment in the event of mobilization.

Department of the Army has developed procedures which officially establish a direct link between all Army units and their wartime chain of command. This initiative, the Army CAPSTONE program, is designed to improve wartime planning and preparation through the organization and training of a force structure designed to meet a particular contingency mission. Under CAPSTONE, the wartime chain of command, probable wartime mission, and probable area of deployment are designated for each unit. Training readiness improvements continue, designed to compliment CAPSTONE. For example, in 1982, 108 ARNG units will participate in approximately 2 weeks of intensive training with overseas commands. This realistic deployment training is the most effective way to fully expose Guard units to their NATO mission during a 2-week training period. This type of training supports the objective of providing Guard soldiers realistic, mission-oriented training, performed in the geographic area of probable employment with AC units. Further, the success attained by ARNG units in responding to mission requirements, immediately upon arrival in an overseas area, is a vivid example to the AC gaining commands and NATO allies of the operational effectiveness of ARNG units. This program provides opportunities for exercising assembly, movement/deployment, and employment. This is the Total Army in action. In coordination with the AC, the ARNG has developed a 5-year schedule for participation of units in overseas deployment training.

ARNG participation in Joint Training Exercises (JTX) continues to provide units with training opportunities that are not normally available in a unit training environment. ARNG combat, combat support, and combat service support units are tasked to perform realistic missions alongside their active counterparts in a joint service environment that challenges them to produce under realistic and stressful conditions. During FY 80 and FY 81, the ARNG deployed a complete infantry battalion to Europe, where they drew POMCUS stocks and participated in JTX REFORGER. The success of this exercise proved the capability of the ARNG to respond to its deployment mission direct from home station. In coordination with AC, ARNG has developed a 5-year exercise schedule for participation of major ARNG units in the JCS joint exercise program.

At the local level, training of individual soldiers, leaders, staffs, and units continue to focus on increased use of local training sites and taking full advantage of training devices and techniques, such as scaled mini-ranges. Travel time reductions plus improved performance-oriented training should provide enhanced readiness and increase retention and recruiting. Where local training is not possible or cost effective, travel funds are necessary to move these units to appropriate training sites. An on-going Training Site Requirements Study (TSRS) is being conducted to determine the types of facilities necessary for expanded use of training sites.

Military education of ARNG personnel provides a means for the individual to acquire new professional skills, enhance existing skills, and to be prepared to accept greater responsibilities in more complex job assignments. In FY 82, military education of the ARNG will continue the growth of past years with increased participation by officer and enlisted personnel in Active Army service schools, DOD schools, Army Area schools, USAR schools, and unit schools. This past year, 60,991 ARNG personnel enrolled in these schools, representing an increase of 6,209 over FY 80. Over 70,000 ARNG personnel are expected to attend this type of training in FY 82. The ARNG Undergraduate Pilot Training (UPT) quotas increased from 90 in FY 81 to 140 students in FY 82, with a ramp-up to 205 in FY 85 and after. To enhance pilot tactical training in the States, the U.S. Army Aviation Center (USAAVNC) is conducting a special Night Hawk/Night Vision Goggles method of instruction course for ARNG Instructor Pilots (IP). Development of this IP cadre is essential to meet Aircrew Training Program premobilization objectives of a total day and night aviation combat and combat support capability. Since the introduction of the Continuing Health Education (CHE) program in the ARNG, the number of students, primarily doctors and nurses, has increased from 18 in FY 78 to 363 in 1981. FY 82 student population will well exceed 400. This program is seen as a major factor in the recruitment and retention of medical personnel.

The National Guard Bureau conducted three new courses of instruction: The Unit Size Company Commanders Course; the Teach, Advise, and Counsel (TAC) Officer Training Program; and the Direct Appointment Orientation Course at the National Guard Professional Education Center (NGPEC) at North Little Rock, Arkansas. The Unit Size Company Commanders Course is designed to develop managerial and leadership skills and techniques which are essential to successfully command a company-size unit. The purpose of the TAC Officer Training Program is to ensure standardization of leadership aspects of

the ARNG State officer candidate schools. The Direct Appointment Orientation Course provides officers and warrant officers who have received a direct appointment, with an orientation of basic principles and concepts of the United States Army system of operation.

The Puerto Rican English Technical Language School (PRETLS) will continue in FY 82 with funding from the National Guard Bureau. The school is designed to provide elementary and intermediate English language instruction to Puerto Rican ARNG trainees. It also provides pre-basic training to the student. The graduate of this course is expected to enter basic training within 30 days. Attrition among graduates of this program has been significantly reduced during initial entry training.

State military academies conduct NCO schools, with an enrollment of over 15,000 enlisted personnel. The State officer candidate schools continued to be the largest source of junior officer accessions for the ARNG, graduating 1,356 students in FY 81 and projected to graduate 1,387 in FY 82. The ARNG provides students to the Combined Arms and Service Staff Schools (CAS 3) at Fort Leavenworth, Kansas. Participation began in FY 81 with seven ARNG personnel enrolled. Thirty-five personnel are expected to attend during this fiscal year.

Two areas which continue to receive special emphasis are those of nuclear, biological, and chemical (NBC) training and the Key Personnel Upgrade Program (KPUP). Action was taken early in FY 81 to accelerate the manning of unit level NBC positions, resulting in 85 percent, officer and enlisted, of the chemical specialist positions filled at the end of FY 81. Concurrent with supporting chemical defense training, there is a requirement to provide contingency chemical defense equipment (CDE) for high priority units. The ARNG goal is to provide contingency items by FY 83 for all early deploying units.

The Key Personnel Upgrade Program (KPUP) provides the opportunity for selected ARNG officers and NCOs to train with an AC counterpart for the purpose of improving the individual's military skills and the training readiness of his units. This program was initiated this past fiscal year with 200 personnel participating. An additional $3.0 million was appropriated to support KPUP in FY 82. This will allow key personnel from high priority units and combat units to train with an AC counterpart. Eighteen million dollars has been approved for FY 83. This will support the objective of increasing participation to approximately 2,000 personnel. Expanded participation will allow for small units (squads, sections, etc.) to train with an AC unit during field training exercises. In addition to KPUP, funds are provided in the FY 83 budget submission for headquarters staff training, travel for environmental training and 3-week annual training for participation in joint readiness exercises. These training initiatives will provide additional training time for high priority ARNG units.

In the area of aviation training, the ARNG initiated the standardized, nationwide implementation of the Aircrew Training Program. The program phases in an ARNG capability to meet premobilization objectives and a capability to train to full mission capacity upon mobilization. In addition, premobilization aircrew qualification/proficiency will be standardized among like units with identical premobilization missions. Expansion of the Army's Flight Simulator Program to all States in FY 82 will provide the means for ARNG aviators to receive training in UH-1H emergency condition recognition training. Prior to FY 82, the program was restricted to aviators located within 200 miles of the simulator, but the positive feedback and documented emergency action improvements supported the expansion of the simulator program to include all aviators assigned to UH-1H cockpit positions.

Guard aviation provides approximately one-third of the Total Army aviation program; ARNG aviators are programed to log more than 28,000 Aircrew Training Manual (ATM) creditable hours in flight simulators during FY 82. Ninety-one percent of the 293,375 hours in the FY 81 program were applied toward aircrew training requirements in conjunction with unit mission support. Briefly stated, ARNG aviation remains cost effective in the utilization of flying hours to train aviators and units.

MOBILIZING THE FORCE

Mobilization preparedness represents the ultimate objective of all the efforts of the ARNG. The Chief, National Guard Bureau, through the Director, Army National Guard, is responsible for producing effectively manned, trained, and equipped units prepared for mobilization. Selected ARNG units are now assigned POMCUS, are included in the Rapid

Deployment Force, and are being considered for direct deployment. This is in addition to providing numerous essential forces to support the major plans of the Army. This continued and increased reliance on the ARNG has underscored the need to streamline the mobilization process, increase mobilization awareness and improve response capabilities.

To meet these challenges, the ARNG has actively participated in the development of new mobilization planning guidance and is in the process of reorganizing the State Area Commands (STARC) for more effective execution of both pre-and post-mobilization missions. Various exercises have been conducted or are scheduled to evaluate mobilization readiness. One such exercise is the Readiness for Mobilization Evaluation (REMOBE). REMOBE is conducted by the STARC for selected high priority units in each State. Major objectives of the exercise are evaluation of the unit capability in mobilization planning, readiness, and the impact of readiness improvements. During FY 81, 22 ARNG units participated in these exericises and additional participation is planned for FY 82. A second exercise is the Mobilization Deployment Exercise (MODEX), also conducted by the STARC. It is designed to enhance the overseas deployment training program. Selected ARNG units deploying overseas complete a mobilization capability evaluation and certification for deployment prior to departure. During FY 81, 12 ARNG units tested this program for feasibility and impact. The results were overwhelmingly positive and all units scheduled for overseas deployments during FY 82 will be encouraged to conduct a MODEX. Further, the JCS biennial mobilization exercise (MOBEX) is in the initial planning stages. The primary thrust of this exercise for the ARNG is expanded participation of the STARC, unit participation at the mobilization stations and an evaluation of mobilization plans and execution capability.

SUMMARY

The ARNG plays a central role in our national defense. The capability of the citizen soldier to respond to the most demanding wartime missions is a matter of record. This status report has provided a description of what the ARNG is doing to ensure that the resources necessary to allow him to respond in the most effective, efficient manner are available. Much progress has been made in recent years. With the support of Congress, this momentum will continue into the future.

Mr. STRATTON. Now we have a much better picture in the Air National Guard.

Who is going to testify on that? General Conaway, why don't you tell us how you are able to do a little better?

STATEMENT OF MAJ. GEN. J. B. CONAWAY, DIRECTOR, AIR NATIONAL GUARD

General CONAWAY. Thank you, Mr. Chairman.

Mr. STRATTON. Do you have to go through Mr. Korb too and Mr. Philbin?

General CONAWAY. Yes, sir, we do.

Mr. STRATTON. How come you were more successful? Is the Chief of Staff of the Air Force more articulate than the Chief of Staff of the Army?

General CONAWAY. The Air Force is very supportive of the Air National Guard and the Air Force Reserve to the extent they can be. We have equipment shortages just like the U.S. Air Force has equipment shortages.

We would like to have more F-16's as the U.S. Air Force would like to have more F-16's. Some of the equipment that we have in the Air Guard has been provided concurrently. The A-7 is a good example. We now have virtually all of the A-7's, but in the early seventies we were equiping concurrently with the Air Force and we appreciate that and this committee's support in that procurement.

We have also had very good recent examples of A-10 concurrent equipage where we have 5 A-10 units in the Air National Guard

that have come from new equipage including 24 aircraft at Syracuse and 18 at Baltimore at this time.

We have F-16's. The first F-16's, as I think you are aware, are coming next year into the Air National Guard. That has already been announced. We are working with the Air Force in the POM to equip at least five or six more of our units with F-16's.

If you ask is that enough, I would probably say no. Nor is the U.S. Air Force getting enough F-16's. We still have some aging equipment—very capable, but aging—but it is the same equipment that the U.S. Air Force is currently flying. That is, F-4C's, F-4D's, equipment such as that. By 1988 we will have over 500 F-4C's and F-4D's that will be over 20 years of age, but they are mach 2 aircraft, still very capable until we can get replacement aircraft.

One recent decision by the Air Force as a result of what Congress has done in the reengining of the KC-135's. The KC-135 is going to be with us probably into the next century. They are reskinning them; they are putting lots of modifications into them and now there is a major reengining program of both the CFM-56 new engine and JT-3D, which is a used engine of Boeing 707's.

The 28 JT-3D kits that were added by the Congress in the 1982 appropriation bill are going to the Air National Guard.

This will enhance the readiness of our first three tanker units. We hope to reengine the remaining KC-135's. We still have a shortage of C-130's in airlift as the Air Force does and we have a shortage in some of the equipment to support the F-4's.

We are modernizing at Niagara Falls from F-101's to F-4's in air defense, and we hope to modernize in the very near future and move from Westchester to Stewart. We are also looking at what we can do to modernize the other C-130 unit in New York.

In the rescue business, Mr. Chairman, we in the Air Force are all in the same boat with the shortage of rescue helicopters and the aging force that we have in the Air Force, the Air Force Reserve, and the Air National Guard, and we are programed within the POM to get some new helicopters. If they are procured by this committee, that will help rescue units such as the one in Suffolk County. But our problems will continue because of the size of our force.

How ready is the Air National Guard and how well trained is the Air National Guard? I can only state that the Air Force does a superb job helping us train and working with us, as evidenced by the fact that today we have a worldwide mission.

The ice cap resupply mission that the Schenectady unit does is not just training to be ready when the balloon goes up. They are performing almost in a monthly fashion with Colonel Hemstreet and that outstanding unit he has.

The same is true with C-130 and A-10 units in Baltimore and Texas. We are in rotation around the world with the Air Force and Air Force Reserve in Panama, in Europe with KC-135's and other machines. We do need to have the same equipment as the Air Force. They are doing the best job they can with the equipment they have available.

How well are we trained? Last year in competition with the Air Force in worldwide competition the Air National Guard won the first air-ground gunnery competition the Air Force has held in 19

years at Nellis Air Force Base, Nev. The boys from Syracuse were the A-10 level bomb competition winners in the U.S. Air Force. Alabama and Kentucky reconnaissance units walked off with the reconnaissance competition with the Air Force and Navy and Guard. I credit the Air Force with helping us train to do that.

Mr. STRATTON. Now if we get into these three wars that we are supposed to get into under the contingency planning, would your Guard forces be immediately capable of going into action in one of the three wars?

General CONAWAY. Yes, sir, they are. I have eight major units in the Rapid Deployment Joint Task Force today, two A-7 units, two RF-4 units, and one EC-130 organization in addition to combat communications. Those are equipped.

Mr. STRATTON. You would also have units in CONUS for fighter interceptor missions?

General CONAWAY. Yes, sir. Of the 26 air defense interceptor locations such as Niagara Falls, 14 of the CONUS air defense locations are performed by Air National Guard units. They are on duty 24 hours a day.

Mr. STRATTON. And the airlift capability is one that you have been carrying out ever since the Vietnam war, isn't it?

General CONAWAY. Yes, sir, even prior to that. In the Korean and the Berlin airlift crises we were involved very heavily with our C-97's at that time.

Mr. STRATTON. Is it likely that the reason that you are so much better equipped than the Army Guard is because you have found a way of integrating the Guard units with the Regular Forces?

General CONAWAY. That very well may be part of it and the Air Force has had to use us more every day maybe because the size they are is not the size they would prefer to be. They have to use us and the Air Force Reserve on almost a daily basis to perform their missions.

We are not just there to train any more to be ready to go. I can't tell you where all the Air National Guard is today except where we are at SAC or air defense alert locations, because we are committed globally daily.

Mr. STRATTON. Mr. White has pointed out to me that in this report as far as the Air National Guard is concerned you are exactly up to speed with your requirements. You have virtually every one of them satisified. Some of them are a little bit old, but the numbers are there.

General CONAWAY. I believe that is correct, sir.

Mr. STRATTON. You mentioned the resupply at the stations in Thule. How long can you continue to carry out that mission with your present equipment?

General CONAWAY. Sir, although the present equipment is aging and it was equipment that was in Alaska with the Air Force until 1975, when it was assigned to the New York Air National Guard in Schenectady, we hope that those ski-equipped aircraft can last another 6 years or so.

Now the commitment will start declining in a few years for that ice cap resupply. As they get more remote sites on station, it will not be as demanding as it is. So the Air Force is in a bit of a dilemma, basically not wanting new ski equipment as much as they need

airlift and trying to last out the period that we need ski equipment up until they get the latest state-of-the-art equipment up there that will not require many people.

Mr. STRATTON. General Walker, is there any way you can intergrate the Army Guard into operations with the Regular Forces in the same way that the Air Force does?

General WALKER. Yes, sir, Mr. Chairman. I am glad you asked me that question. I was afraid I would not have a chance to answer that.

You can't imagine the number of excercises the Army Guard is now participating in with the Active components. This year there are nine joint exercises the Guard will be participating in with Active Army units.

In addition, we are deploying troops—as you know, about 119 units—to Europe this year to allow them to work side by side with the Active components over there, and we are hearing nothing but good reports out of them.

Mr. STRATTON. How long do they do that?

General WALKER. They do that for 2 weeks, sir. That gives them the opportunity to see the environment that they will be fighting in. It gives them the opportunity to establish a relationship with their gaining commands over there. It is just a tremendous program and performance.

We have had two or three of them within these wars in the exercise, so we are completely satisfied with it. It is on the increase, sir.

Mr. STRATTON. They go over as a unit, not just as individuals?

General WALKER. No, sir, not as individuals. Let me back up. Some of these are cells that go over there and work with the gaining command. Generally speaking, most are full units.

Mr. STRATTON. How can they use the modern equipment that the Army has over there when they are trained on that World War II stuff?

General WALKER. Sir, I haven't had any reports except the fact that they are using the same type of equipment over there that the gaining commands use. You have to realize they are not fully modernized over there yet.

Mr. STRATTON. They are not fully modernized over there? They have been telling us how they get all the M-1's over there.

General WALKER. They are in the process of that conversion now.

Mrs. HOLT. General Conaway, I am afraid I did not get your statement about the helicopters. You said it looks as if you are up to speed in every area except the CH-53 and it says shortfall alleviated by three CH's assigned.

Do you have a need there?

General CONAWAY. The Air Force Reserve and Air National Guard are short in the rescue helicopter arena. Within that report for the next couple years that is correct. The CH-53 is a non-air-to-air refuelable helicopter—which means it cannot go out for long-range rescue. The Air National Guard in Suffolk County with its CH-3's and 130's that it can refuel can go out for long-range rescue operations.

The Coast Guard takes the close-in rescue. We take the far-out rescue, including rescuing injured Russians off ships and things such as that.

Those are aging aircraft, and within the 1984 POM, starting in 1985 or 1986, there are some helicopters in the Air Force program to help start updating the Air Force, the Air Force Reserve and the Guard. There is nothing before 1986, and it is a problem.

Mr. LEATH. Mr. Chairman.

Mr. STRATTON. Mr. Leath.

Mr. LEATH. General Walker, you mentioned that the units that go to battle first are the ones that are equipped first. Will you expound on that a little bit and explain what you mean and how you do that?

General WALKER. Sir, rather then get into any classified information, what I really mean is: Let us say whether it be Guard, Reserve or Active Army, the unit that deploys first, from any one of those three components, will be the first one that is equipped, and I think this committee fully agrees with that.

Let me point out here that the Reserve components have many units that go much earlier than a lot of Active component units. It is the unit that goes and fights first that is equipped first.

Mr. LEATH. What you are saying is that those units that are scheduled to be deployed first are up to a level of standard equipment?

General WALKER. We are trying to get them up to that level; yes, sir.

Let me point out here, sir, there is no doubt that the Army leadership today is well aware of this. The Army leadership is trying to take care of these problems. For the leadership that the Congress has taken in equipping the Reserve components, I have to tell you again: We are most appreciative.

Mr. STRATTON. General Conaway, can you tell us what the Air Force is turning over to the Air National Guard or the Air Reserve this year in compliance with our directive in last year's authorization bill?

General CONAWAY. In accordance with last year's authorization bill there are eight C-130H's coming to the Air National Guard that are being programed at this time to go to the Alaska Air National Guard because of the long-range nature of the missions that they get involved in there.

Then the fallout from that, which is the C-130E model, will retire the C-7 unit that General Bodycombe has in the Air Force Reserve. So that is coming in.

There is the JT3D reengining for the KC-135's, 28 kits that will take care of 28 Air National Guard tankers.

In addition, there were 20 F-16's designated, of the Air Force's 120, to go to the Air National Guard. The Air Force has asked that those 20 be the same 20 that are going to McIntyre Field, S.C., which will be our first F-16 unit.

Mr. WHITE. General Walker, would it be an exaggeration to describe the air defense capability in the Guard divisions as absurd?

General WALKER. That would not be an exaggeration.

Mr. WHITE. Since the Army has no plans for retirement of the Chaparral, would it be a reasonable proposition in your judgment to begin a program to reactivate that line to equip Guard units because they are not going to be at all useful in a combat environ-

ment without air defense? At least that is what the Army has said in justifying air defense for its Active divisions.

General WALKER. As I understand it, sir, the Chaparral is a system that the Army will keep out into the 1990s.

Mr. WHITE. Right. There is no follow-on to it.

General WALKER. Your question to me was what?

Mr. WHITE. Why we should not begin reactivating the Chaparral line to begin a long-term procurement of the Chaparral for the Guard?

General WALKER. I believe that since that weapon is to be with the Army for the next years, as we see it that would be a good program.

Mr. WHITE. Of what use is a division in combat without air defense?

General WALKER. You bring up a good question here and I share your thinking.

Mr. WHITE. You have a capability as the Vulcans fall out of the Active Forces inventory to put kits in the Guard maintenance shops yourself rather than sending them down to the Army depots.

General WALKER. What kits are you talking about?

Mr. WHITE. The Pivad kit.

General WALKER. We have no experience in the Guard with that.

Mr. WHITE. If you have a check data package you could do it.

General WALKER. I have no knowledge of it. If it can be done, I think the Guard can do it.

Mr. STRATTON. You mean the head of the Army National Guard has never seen the project improvement thing? Things are so bad they don't even let the Guard see the project improvement business.

General WALKER. Sir, you have about named it. In this case I have not seen one.

Mr. STRATTON. That certainly indicates that you people are the orphans over there.

Mr. WHITE. Mr. Chairman, essentially the position of the Army is that the Vulcan is so bad that they had to throw it out of the inventory because a flock of birds could fly through it at 1,500 meters and not lose any feathers, so they are replacing it with the Divad gun in the heavy divisions and they plan to give it to the Guard because it is so bad that it can't kill anything.

There is a product improvement kit that will at least give it some capability, but the Army does not want to do that.

Mr. STRATTON. I think we have to do something to take care of that.

General WALKER. I hear you discussing that in relationship to the Guard. I really don't know that program. Would you like some comment on it?

Mrs. HOLT. Would somebody back there be able to comment? General Menetrey.

General MENETREY. Mr. White is correct. We looked carefully at the Pivad program and determined so far at least that it was not cost-effective.

In terms of the statements about the air defense battalions for the Guard and Reserve, I agree completely that air defense along

with much other modernization in the Army is in bad need of upgrading.

We may be able to give some Chaparrals to the Guard and Reserve. We are looking at the total picture right now, and it looks like some could be released. There are not many in the program to upgrade those air defense battalions.

Mr. WHITE. Two years ago we authorized and there was appropriated 32 Chaparral fire units for use by the Army as maintenance float.

General MENETREY. Yes, sir.

Mr. WHITE. There is a proposal which has been circulated to us suggesting that 16 of those Chaparral fire units be released to the Guard so that they could put two in each division and the air defense battalion for training and familiarization with the most modern equipment.

Is that a reasonable proposition?

General MENETREY. Yes, sir, however, there are other propositions that concern the Chaparral, and they are related to the organization of the heavy divisions of the Army. It is possible, however, that we will be able to free up some Chaparrals.

Mr. STRATTON. Mrs. Holt.

Mrs. HOLT. There is a unit in Puerto Rico under Gen. Orlando Llenza. Is that Air Guard?

General CONAWAY. He is the adjutant general. He is a blue suiter, but he is adjutant general over both the Army and Air.

Mrs. HOLT. Are we using the Guard effectively down there? I hear from a lot of the military people in that area that they are doing a heck of a job with what they have. I don't know, that may be just a biased opinion about it. I get the feeling that there is a real mission there today with all the problems we have in that Caribbean Basin and with the present emphasis on trying to do things. Apparently he was training people in some of the island countries.

Is he being equipped properly to do that job?

General WALKER. Mrs. Holt, Puerto Rico Army National Guard has established exchanges with first of all the Dominican Republic and then Barbados. I believe these are the only two Army Guard exchanges that we have going on.

There are plans, and I don't know that we can discuss them here at this time, for expansion of that mission. I have to tell you that I have to endorse what you have said: The Puerto Rican National Guard is an outstanding Guard.

Mrs. HOLT. I was impressed with it. I want to be sure that it is receiving the attention that it should be receiving. They can do a lot of things to improve the situation.

General WALKER. Yes, ma'am.

General CONAWAY. They have A-7's down there and they are very near the threat. The units in the Air Guard and the Army Guard help protect the 3.2 million Americans we have in Puerto Rico. General Walker and I have made many trips down there and are impressed with their efforts.

Mrs. HOLT. Especially in January and February?

General CONAWAY. That is right. They are right there where the mission is, and the threat is around them and they do an outstand-

ing job. They participate at least once a year in our rotation. The Air Force base is in support of the Panama Canal, and they are great ambassadors of the U.S. military in Central and South America.

Mr. STRATTON. We are paying proper attention to equipment for them?

General CONAWAY. Yes, we are.

Mr. WHITE. General Conaway, are there Active Air Force units equipped with 24 A-10's per squadron?

General CONAWAY. I believe most of the Active units have 24 aircraft per squadron.

Mr. WHITE. Why would it not be reasonable to equip Guard units the same way with 24 A-10's per squadron?

General CONAWAY. It definitely is wherever possible to do that. For example, of the five A-10 units we have Syracuse has been equipped with 24 aircraft. The other four haven't been. We are hoping to work that within the program with the Air Force as they move airplanes around and things of that nature, but it is cost-effective wherever possible and the Air Force is making a concerted effort. We are getting most of our A-7 units to 24 PAA and as many of our F-4 units as we can.

Mr. WHITE. The present force structure, assuming the deliveries o. the A-10's, will hold until about 1990 if the line is shut down at which point the attrition begins to erode the force structure. Having invested that much in training and the capability that is kind of unique to the A-10, does that make very much sense?

General CONAWAY. It doesn't make sense to have attrition because you do close down units or deactivate units. What usually happens in this case is that other aircraft are procured or we get more A-10's.

Mr. WHITE. There is no follow-on aircraft to the A-10?

General CONAWAY. No; it would have to be one of the existing aircraft that are currently being procured if the A-10 line does stop. They would have to change missions basically if there were not enough A-10's to keep them up due to attrition and things of that nature.

General CONAWAY. Yes.

WRITTEN STATEMENT OF MAJ. GEN. JOHN B. CONAWAY

AIR NATIONAL GUARD—OVERVIEW

It is my pleasure to once again report to you on the current posture of the Air National Guard.

The Air Guard is at its highest readiness level in history, rapidly approaching a manning level of 100,000 men and women, military and military technicians and deeply committed to performance of both a State and Federal mission.

The State mission of the Air National Guard is to provide organized, trained, and equipped units to respond to orders of State authorities, to provide protection of life and property, and preserve peace, order and public safety. During fiscal year 1981, the Air National Guard was called upon 22 times to perform state duty for approximately 3,800 workdays. These missions involved support of civil disturbance control operations, such as strikes and nuclear protests, power outages, forest fires, and the California Med Fly operation. In addition, the Air Guard was called up 45 times to support the National Search and Rescue Service and was involved in 32 saves/rescues.

The Air National Guard's Federal mission, as part of the total Air Force, is to provide units of properly equipped and trained personnel for prompt mobilization

whenever called upon in time of crisis. Our units also perform designated Air Force missions during peacetime, primarily as a by-product of training.

The Air Guard is manned and ready to carry out this dual mission. It is our belief that strength through readiness is the key to success.

The readiness of our flying units continues to remain high despite increased taskings and conversions to newer and more complex weapon systems. Military manning was approximately 98,300 at the end of fiscal year 1981 and is projected to be 100,100 by the end of fiscal year 1982 and approximately 101,800 by the end of fiscal year 1983. The Air Guard flys more than 1,600 aircraft in a variety of demanding missions ranging from Air Defense and Tactical Fighter and Airlift to Strategic Air Refueling and Rescue and Recovery. We participate as full partners with the active Air Force and the Air Force Reserve in carrying out these missions assigned by our civilian leadership.

In 1981, the Air Guard achieved the lowest Category A Aircraft Accident Rate in its history with a rate of 1.7 accidents per 100,000 hours of flying. Prevention of accidents requires a positive professional attitude and dedication to make the safety program work. Our people reflect both. The Air Guard is proud of its combat readiness, recent accomplishments, and genuine role in today's total Air Force.

POSTURE

Flying units: Air National Guard flying units are organized into 24 wings, 67 groups and 91 flying squadrons with more than 1,600 assigned aircraft. The continued strong support of the active Air Force is permitting us to replace older, less capable aircraft with more modern and sophisticated weapon systems. In the first quarter of fiscal year 1982, one OA-37 unit transitioned to A-10's, an F-105 unit converted to A-7's and two units upgraded from C-130A's and C-130E's to C-130E's and C-130H's respectively. In the second quarter, the Guard's only EB-57 unit converted to F-4's while in the third and fourth quarters the F-101 interceptors will be retired, with the two F-101 units converting to F-4's.

In fiscal year 1983, the Air National Guard will receive its first F-16's and will convert an A-7 unit to this modern weapon system in the fourth quarter. The multimission F-16 is an exceptional aircraft with a superior technological capability. Its introduction into the Air National Guard is another step forward in the continuing efforts to upgrade mission capability and achieve a general compatibility between Active and Air National Guard aircraft types.

Other modernization efforts in fiscal year 1983 include the conversion of an O-2 unit to F-4's in the first quarter and the conversion of the Air Guard's remaining F-105 unit to F-4's in the second quarter. This will complete the retirement of the F-105 tactical fighter from the Air National Guard. In addition to the introduction of the F-16, the fourth quarter will see the conversion of an RF-4C unit to F-4's and an increase in Primary Aircraft Authorization (PAA) for an RF-4C unit concurrent with the establishment of a Replacement Training Unit (RTU) for ANG reconnaissance assets. An A-7 unit will also increase its PAA from 18 to 24 aircraft.

As a result of these concerted modernization efforts, Air National Guard flying units make a substantial contribution to the total Air Force combat capability and will fulfill a large portion of force commitment during serious crisis. In fiscal year 1983, the Air National Guard will possess 66 percent of the total Air Force Air Defense Interceptor forces; 54 percent of Tactical Reconnaissance forces; 32 percent of Tactical Airlift forces; 26 percent of Tactical Fighter forces; 17 percent of the Aerial Refueling forces; 14 percent of the Rescue and Recovery forces; 25 percent of Electronic Combat Forces; and 32 percent of Tactical Air Support forces. In addition, five flying units are active members of our nation's Rapid Deployment Joint Task Force (RDJTF).

Non-flying units: Equally important to the success of the Air National Guard mission are our non-flying units. There are 243 independent units heavily concentrated in the areas of combat communications, weather, tactical control, electronic installation, civil engineering and air base defense.

The combat communications units are equipped to support the Tactical Air Forces. They provide specific communications service to forward deployed commanders and provide restoral service to the Defense Communications System. They are also equipped to provide terminal air traffic control facilities and services. All combat communications unit assets are designated in the USAF War and Mobilization Plan and most units are specifically tasked to support unified command war plans. Of particular interest is the fact that five combat communications units are also members of the RDJTF. The Air National Guard has also been tasked to provide both near- and long-term support to the Joint Communications Support Ele-

ment (JCSE). An existing Air National Guard combat communications unit will provide the near term support starting in fiscal year 1982 with a permanent unit organized in fiscal year 1984. The prime mission of the JCSE is Joint Task Force support. During the RDJTF Exercise Bright Star 82, Air National Guard units provided approximately 75 percent of the Air Force combat communications. As in the past two years, an Air National Guard combat communications group and its subordinate units have deployed approximately 400 personnel to Europe in support of major exercises. Significant support has also been provided for exercises in the continental US and in the Pacific Theater.

Most of our weather flights have a tasking to support Army Guard and Reserve units. We do have one weather flight tasked to support the Air Force Tactical Weather System.

Our tactical control units operate control and reporting centers and posts in addition to providing forward air control posts., All units have wartime taskings and quick response deployment schedules. Most of these units now possess the TPS-43E Radar. The remaining units will receive this new radar in late fiscal year 1982 when deliveries from fiscal year 1981 procurement begin. Tactical control units train at their home stations by controlling active and Air National Guard fighter aircraft and by system-wide simulated exercises. A limited number of units also participate in large scale exercises each year. Two new Air Support Radar Teams are also being added in fiscal year 1982. Each unit will be equipped with new TPB-1C tactical radars.

Our Electronic Installation Squadrons (EIS) are equipped and trained to engineer, install, relocate, remove, restore and accomplish on-site depot level maintenance on radars, antennas, cable plants, radios, and teletype and communications centers. They maintain proficiency by augmenting the Air Force EIS on Communications-Electronics-Meteorological (CEM) facility requirements worldwide. They provide the Air Force with highly trained CEM engineering, installation and maintenance force capable of immediate response to contingency requirements. In fiscal year 1981, they provided approximately 52,000 training workdays to the Air Force by accomplishing engineering and installation work as training projects. Comparable levels of support are anticipated in fiscal year 1982 and fiscal year 1983. Two Air Guard EIS units deployed to Europe in August 1981 and performed successfully under simulated wartime conditions. The exercise was a complete success.

Like their flying unit counterparts, our non-flying units contribute heavily to total Air Force combat capability. In fiscal year 1983, the Air National Guard will possess 70 percent of the total Air Force combat communications forces; 50 percent of the tactical control forces; 55 percent of the electronics installation force and 12 percent of the weather reporting and forecasting forces.

Air National Guard Civil Engineering Red Horse and Prime Beef units have conducted deployments to active Air Force bases, Air National Guard bases, and Army National Guard posts for annual training. The construction, alteration, and repair projects undertaken by these forces not only helps them hone their skills for their wartime mission but also greatly assist the host base in completing urgently needed projects.

In 1982, the Air Guard will activate an Air Base Defense Squadron Headquarters and an Air Base Defense Flight. They are the first dedicated Air Base Defense units in the Air National Guard and the Air Force in the CONUS. A second Air Base Defense Flight will be activated in fiscal year 1983. These units will be equipped and trained to provide ground defense of critical Air Force bases and storage sites in Europe.

REALISTIC TRAINING

I have discussed some of the contributions the Air National Guard makes to the Air Force as a by-product of training. This realistic training is best embodied through our participation as full partners with other components in JCS and USAF training exercises. Our increased overseas deployments, where we have temporarily moved entire flying units along with ground support personnel, as well as civil engineering and communications units, have furnished us with valuable and realistic training.

To illustrate the Air National Guard's global readiness and the realistic training received, we have recently deployed F-4's to Iceland, A-10's to Germany, A-7's to Italy, and F-105's to Turkey. We also had two KC-135 tankers on constant tasking with the European Tanker Task Force. In the Southern Command region, the Air Guard maintains four A-7's on station at all times in defense of the Panama Canal, maintains two Aircraft Control and Warning Radars in defense of Puerto Rico, and

we support airlift requirements throughout Central and South America with six C-130 aircraft.

In Alaska, our RF-4's have provided photo support for exercises and Air Guard tankers have supported the Alaskan Tanker Task Force.

In the Pacific, our F-4's from Hawaii have participated in PACAF's Red Flag and have fired missiles at Combat Sage. Two Aircraft Control and Warnings Radar Squadrons provide 24 hours per day air defense surveillance of Hawaii. In addition, we had more than 300 combat communications and 100 Tactical Air Control personnel supporting JCS exercies Team Spirit in Korea.

Such a degree of operational readiness demonstrates that the Air National Guard, when equipped with modern, long range tactical aircraft and equipment, is a full total force partner in the front-line of our defense forces.

I am proud to report to this Committee that combat readiness and capability to perform the wartime mission of the Air National Guard was again successfully demonstrated in 1981 by Air National Guard units during Air Force Operational Readiness Inspections (ORI's). These inspections were conducted under realistic wartime scenarios, and the majority of Air National Guard units received these inspections while at deployed locations. Since the inception of the realistic scenario in 1976, covering every aspect of the wartime mission, Air National Guard units have materially enhanced their capability and readiness.

MANPOWER

The Air National Guard achieved an end strength of 98,293 in fiscal year 1981. This is the highest strength level ever achieved by the Air National Guard, and it exceeded the original fiscal year 1981 budgeted strength by almost 2,500 personnel and the revised programmed strength by 210 personnel.

With the help of the Congress, the Air National Guard was able to add 1,000 personnel to our fiscal year 1982 programmed drill strength. The Air Guard's revised program is 96,788 drill strength and 3,312 full-time active duty Guardsmen for an end strength of 100,100 and an average strength of 99,500. In the fiscal year 1983 President's budget, we have programmed 96,623 drill strength and 5,158 full-time active duty for a total end strength of 101,781 and an average strength of 101,100. This strength level supports approximately 98.6 percent of the Air Guard's projected wartime requirement.

While the Air Guard's fiscal year 1981 strength was above the programmed levels, many critical skills remain well below an acceptable level. The Air National Guard is still experiencing difficulty in securing non-prior and prior service personnel in certain career fields such as munitions, security, avionic systems, and ground communications-electronics maintenance. Also with the help of the Congress, we have expanded our enlistment incentive program in fiscal year 1982 and fiscal year 1983 to address this problem. We fully expect to achieve our strength goals in each fiscal year and anticipate improved manning in the critical skill areas.

The Air Guard's Recruiting program is currently structured toward precision recruiting (recruting for critical skills or valid Unit Manning Document vacancies only). The overall responsibility for recruiting has been delegated to the States and the recruiters have been administratively reassigned from the State headquarters staff to each base. Along with precision recruiting, the Air Guard is placing special command emphasis on recruiting rated officers, medical officers, minorities, and women. Renewed emphasis is being placed on the palace front program. This program allows the Air National Guard to identify prior service Air Force personnel separating from the Active Air Force. The special emphasis on these programs will aid our recruiters in finding qualified individuals from all backgrounds to fill existing critical skill vacancies.

A formal Air National Guard Retention program utilizing Base Career Advisors was implemented in May 1981. Both first term and overall retention improved as a result of increased emphasis on this program. The retention rate increased from 61.4 percent in fiscal year 1980 to 63.1 percent in fiscal year 1981. An integral part of the retention program is an effort to retrain certain personnel into critical skill shortage areas. Many of these skills require mandatory attendance at formal technical schools. Again, with the help of the Congress, funding was provided in fiscal year 1982 to enter approximately 1,000 personnel into a retraining program, thus increasing our critical skill manning level. The fiscal year 1983 President's budget also includes funding to retrain 1,500 individuals. With this level of effort, we fully expect to achieve our stated critical skill goals. With full implementation of the retention program we expect to reduce the critical skills shortages within the Air National Guard and further increase the quality of the force.

Incentives have a direct effect on both recruiting and retention. Fiscal year 1981 saw two new programs: the affiliation bonus and the student loan repayment program. The affiliation bonus encourages skilled prior active service personnel to affiliate early with Selected Reserve units. An eligible person obligates himself to serve satisfactorily in the Selected Reserve for the full period of his remaining military service obligation and is awarded a bonus of $25 per month for each month for remaining service obligation. The loan repayment program authorizes the Secretary of Defense to repay up to 15 percent of the loan amount or $500, whichever is greater, of Higher Education Act loans for individuals who enlist or reenlist in the Selected Reserve. We believe that these incentive programs have and will continue to play a significant role in reducing our mission essential skill shortages.

The Air National Guard full-time manpower programs consist of military technicians and guardsmen on active duty. They comprise the daily work force that is essential to mission accomplishment. This combined technician-military workforce is the catalyst of success in meeting the responsibilities and missions assigned to the Air National Guard. Under the Total Force policy, readiness and response capability are completely dependent on the availability of these manpower resources.

In fiscal year 1981, we fully met our combined technician and military full-time manpower end strength. We fully expect to accomplish all programmed technician conversions through further voluntary conversions and technician attrition during fiscal year 1982 as well as again meeting our full-time manpower strength.

Since the Congress has permitted us to determine and program the appropriate mix of technicians and full-time military, we plan to voluntarily convert an additional 600 technician positions to military status in fiscal year 1983. This will be accomplished in those functions where it is advantageous to have full-time military. We have also requested 1,246 additional full-time military to fill increased requirements associated with aircraft and equipment changes and other support requirements assigned to Air National Guard units.

SUMMARY

The Air National Guard has proven to be an integral part of the Total Force. The Air Guard exists to support U.S. foreign policy and national security objectives, and provides a State militia uniquely qualified for missions within the United States. Our responsibilities are truly global, national, and local, and each offers its own set of challenges for the future.

The Air National Guard is ready to meet these challenges. The capability of our citizen airmen to respond to the most demanding wartime missions is a matter of record. We appreciate the continuing strong support of the Congress. That support has permitted the Air National Guard to continue modernization and to make significant progress toward our goal of strength through readiness.

Mr. STRATTON. General Walker, could you give us for the record the equipment that you would request, if you had your druthers, to flesh out the Guard so that it would be fully equipped for combat?

General WALKER. You want the equipment needed for the total structure, sir?

Mr. STRATTON. That is right. All your brigades that are used to round out Army divisions plus your other Guard units. As I said earlier, General Greenlief has given us his figures and they add up to a staggering $3.7 billion. I think we ought to know how far behind we are.

General WALKER. Let me discuss that figure a minute too, sir. That $3.7 billion is on major items.

Mr. STRATTON. I assume you have a speaking acquaintance with him. You can get a copy of that.

General WALKER. The $3.7 billion is on major items, and that does not take into consideration modernization.

Mr. STRATTON. 933 aircraft short, 802 tactical automatic data processing equipment, 694 tanks, 3,722 trucks, 310 artillery pieces, 433 radars, 384 Chaparral-Vulcans, 9,600 Stingers, and 9,611 carriers plus communications equipment costing $533 million.

General WALKER. I have no controversy with his figures, sir.

Mr. STRATTON. You mean you would not pass up all of that if he could get it?

General WALKER. I would take every damn stick of it—excuse my language.

Mr. WHITE. If the Congress in its wisdom saw fit to add money for procurement of new equipment items would it be your judgment that we should buy older systems for the money such as the AH-1S and the ITV, or along with the Air Force and the Navy concurrent equippage idea, that we should put that money into procurement of AH-64's and IFV's?

General WALKER. Sir, first you are asking me about the attack helicopter problem. You must realize that for a number of years the attack helicopter fleet will be a mixed fleet. There are many things I think have to be considered before you can give that question full consideration.

Mr. WHITE. Through all the years of wisdom that brought you to the two star level surely you have a judgment on that, whether you want the older generation equipment or modern equipment.

General WALKER. Let me put it to you this way, sir. If I can get the Cobra AH-1S model today, I will take it today.

Mr. WHITE. If you can get the AH-64 in the timeframe?

General WALKER. If I can get in the timeframe, I will take it. I know I can get the AH-1S model today, and I think this country needs it today.

Mr. LEATH. Mr. Chairman.

Mr. STRATTON. Mr. Leath.

Mr. LEATH. General Menetrey, are there any examples that you could give of modern equipment that perhaps you intended to distribute to the Guard?

General MENETREY. I mentioned the M-1 tank, which will be distributed to some Guard units prior to most actives. The ITV Mr. White mentioned is really a modernization item which also will be distributed to the Guard and Reserve units. It is the priority setting in terms of which Guard units in this case are most critical for deployment, which can deploy most rapidly. It is their wartime mission that governs distribution priority.

I might add one more comment. If there are equipment shortages in the Guard and Reserve, you know there is also a total Army equipment shortage and the list of items will get quite extensive and somewhat staggering, I am sure.

General WALKER. May I add a little bit, sir.

Mr. LEATH. I think it would be best if you would provide that for the record.

General MENETREY. I can give you other examples also, but it is a long list.

General WALKER. Just to give you the length of that list partially we are scheduled to get 38 modernization systems in the next few years.

Mr. STRATTON. General Conaway, could you give us the same thing? You got everything, I guess, but anything that they have overlooked, could you give us a list of what you would like to have to round out your force for the record?

General CONAWAY. Yes, sir, I certainly will. We don't have everything, but I certainly will.

General WALKER. Mr. Chairman, can we start that list at the end of 1982 including what you gave us last year? We will give you that list of requirements starting in 1983, is that agreeable?

Mr. STRATTON. Yes. You are going to prioritize it, as you have been saying. That would be OK so that we know what you would like to get first.

General WALKER. Of course you are talking about major items?

Mr. STRATTON. Right.

[The following information was received for the record:]

OASD (MRA&L) provided the Congressional Armed Service Committees, on 15 February 1982, an Annex to Volume II, Force Readiness Report, "National Guard and Reserve Equipment Readiness." This report depicts shortfalls, current status and programed actions for major items of equipment that support the wartime requirements. Additionally, the report includes an assessment of the Air Reserve Forces (ARF) readiness posture.

The total Air Force fiscal year 1983 shortfall for like items appearing in the Annex in $1.1 billion. The ARF share of the $1.1 billion is $41.3 million and does not consider unprogramed enhancement/modernization programs, such as early conversion to F-15/16 aircraft and larger aircraft squadrons.

The Air National Guard is a full partner in the Air Force POM process and fully supports the Air Force input to the fiscal year 1983 President's Budget. A major investment would be needed for the Air National Guard to logically and systematically phase in those aircraft needed to modernize its aging force. The costs of these items depends on factors such as quantity procured, production rates, lead times, and contract closing costs and limitations.

Mr. STRATTON. If we might have the admiral back a second.

Admiral, what is the status with regard to the Navy in terms of Reserve capability other than individual capability?

As far as I know there are no ships actually being manned by the Reserve. We have shore installations, intelligence units, et cetera, et cetera, but what is the status of the Navy Reserve in terms of contributing to the total force in the event of war?

Admiral PALMER. We are talking about the Selected Reserve, presently about 87,000. We have a congressional mandate to build up——

Mr. STRATTON. They all have individual billets, Vice Chief of Navy Information and all that sort of thing?

Admiral PALMER. All those type units are sustaining units. We also have hardware units. We have 49 aircraft squadrons. We do have Selected reservists who drill in Naval Reserve Force ships. These are ships that are dedicated to Naval Reserve training in peacetime.

We have a new program this year of which we are very proud to replace our antiquated World War II FRAM I *Gearing*-class destroyers, with new, much more modern, much more capable and really deployable assets.

The *Knox*-class frigate—1052 is its number. We accepted two in January: One on the east coast and one on the west coast. We expect two more to come in July and two the following year, and eventually we'll build up to 24 ships of two classes.

Mr. STRATTON. Will these be manned by the Reserve?

Admiral PALMER. The *Knox* class, the first class we are getting right now, will be manned half by reservists and half by Active-duty personnel. The plan now—and it will probably be fine tuned several times—is to put the new *Perry* class of FFG-7 into the Naval Reserve. We will probably get up to about 16 of those.

I happened, by coincidence, to be the commissioning officer of *Perry* in December 1977. So the ships are that new. We don't want to acquire brandnew ships for the Naval Reserve. We don't want 30-year-old ships either. What we would like is that new ships go into active service, be shaken down and deployed and all the bugs worked out of them and then we get them. We would keep them from then on. It is a little different on the air side.

On the air side in my statement I mentioned—Mr. White referred to it earlier—we are trying to get away from our historical vertical acquisition of aircraft. They are not really hand-me-downs, but they are older aircraft.

What we want to do is get into a horizontal buy, probably first with the F/A-18 so our squadrons fit into the maintenance benches and so on in the Active Force when they are on the carrier and when they are deployed someplace.

I think that is a very sensible objective. It is long overdue; it is not going to be easy to do; you can't do it rapidly; and it is going to cost money. Eventually, if we are really going to have one Navy, Active and Reserve, then I think we will have to go in that direction.

Mr. STRATTON. Do you have Reserve air wings that operate together off carriers and things of that kind?

Admiral PALMER. We have two air wings—Carrier Air Wing 20 on the east coast and Carrier Air Wing 30 on the west coast.

Talking about just the fighter and attack aircraft, each air wing has two F-4 squadrons and three A-7B squadrons. I have more service life left in the F-4's than I have in the A-7B's. So I have recommended to the Active Navy—and I have SECNAV and CNO concurrence—that we should replace the A-7B aircraft first and that should be as soon as possible.

We a working actively now to nail down a plan of action and milestones. I cannot answer when this modernization will happen, but our goal is as soon as possible, ideally in the next several years. If possible, we want to do this concurrently with the initial standup of the first USN air wings in the F/A-18 aircraft.

Mr. STRATTON. What about your patrol squadrons?

Admiral PALMER. I have 13 patrol squadrons and they are made up of P-3 A and B aircraft. To make them interface better with the P-3C aircraft for handover of ASW contacts, for navigation, for other reasons, we are asking for additional money for tactical navigation modernization (TAVNAVMOD). This is a procurement item that we urgently need, and it has a very high priority.

Mr. STRATTON. Would you not prefer the P-3C?

Admiral PALMER. Yes, sir, and there have been some in the budget.

Mr. STRATTON. They are in the budget, but I don't know whether they are intended for the Reserve or not.

Could you give us in the same way a list of what you would like to have?

Admiral PALMER. I know exactly what you want and I will provide it.

Mr. STRATTON. Thank you.

[The following information was received for the record:]

NAVAL RESERVE EQUIPMENT SHORTAGES

The following equipment is needed to fill equipment shortages which exist or will soon exist in the Naval Reserve inventory.

[Dollars in millions]

	Quantity	Cost
Medium transport aircraft:		
C9B or 737-200Q.C. (military version)	10	$250
Spares		21
P3A/B tactical navigation modernization	19	31.4
P3A/B compatibility modernization	(1)	177
Security group equipment (various)	306	4.4
Cargo handling equipment	685	33.7
Construction battalion equipment (various)	2 3,000	98.5
Total		616

1 Various quantity.
2 Estimated.

The following aircraft would be required to modernize Reserve Air Wings.

[Dollars in millions]

Type	Current model	Modernization Requirement	Quantity	Cost
Fighter	F-4 N/S	F/A-18	48	$1,607
Attack 1	A-7B	F/A-18	48	1,607
		A6-E	20	917
Recon	RF-8G	Undetermined	8	(2)
Early Warning	E-2B	E-2C	8	572
Refueling	KA-3B	KA-6D	8	367
ECM	EA-6A	EA-6B	8	693
Combat Sar	HH-3A	SH-60( )	8	(2)
Helo Light Attack	HH-1K	SH-60( )	16	(2)
CV ASW	None	S-3A	20	(2)
Total				5,763

1 Two squadrons of A7B transition to A7E as in interim until quantities of F/A-18 become available to transition the last two attack squadron from A7E to F/A-18 providing a total of four F/A-18 attack squadrons.
2 Unknown.

Mr. STRATTON. Are there any questions of the admiral?

Mr. Klein.

Mr. KLEIN. Admiral, with regard to the P-3 aircraft, have you done a study on bringing those aircraft up to, say, the P-3C level, your current aircraft fleet from an A and B model to the C level of capability?

Admiral PALMER. Yes, sir. The TACNAVMOD is that program to make it as capable as possible in the older airframes. You are talking about changing internal stations. You are talking about going for automated systems which are essentially more manual in the P-3A and B.

With the TACNAVMOD, however, we can use Reserve squadrons and the active squadrons interchangeably and do in fact. Squadrons that I sent to the Pacific for training ended up backfilling when Active squadrons were sent elsewhere, specifically to the Indian Ocean. That is one of our brightest spots in terms of capability, but we do need this TACNAVMOD urgently.

Mr. KLEIN. Can you tell me how much is in the budget this year for that kind of MOD?

Admiral PALMER. Yes, sir. I think I have that. There is no funding in the TACNAVMOD for fiscal year 1983. It was dropped out because of funding constraints. It is a POM 1984 issue right now which we are working up separately, but not in this budget.

At a minimum we need 19 kits. That would cost $31.4 million. If additional P-3C aircraft are not procured for the Navy we will need about 71 kits at a cost of about $98 million, sir.

Mr. KLEIN. The $31 million figure was for how many?

Admiral PALMER. For 19 kits.

Mr. KLEIN. For 19?

Admiral PALMER. Yes, sir.

Mr. STRATTON. Thank you very much, Admiral.

I think we had better turn now to General Berkman, the Chief of the Army Reserve.

It is my understanding, General, that the Army Reserve divisions are all training divisions so that they don't fit in as divisions in the same way as the Guard divisions?

STATEMENT OF MAJ. GEN. WILLIAM R. BERKMAN, CHIEF, ARMY RESERVE

General BERKMAN. That is correct, Mr. Chairman. Nevertheless they have equipment requirements in order to be able to perform their wartime mission conducting the training centers that would be required in the event of mobilization.

Let me say at the outset I appreciate the interest and concern and the emphatic interest that is demonstrated on the matter of equipment for the total Army and for the Army Reserve as a part of that total Army.

I want to point out at the outset that I as Chief of the Army Reserve, like my colleague, General Walker, do not fund, procure, or control distribution of major end items of equipment for the Army Reserve.

As you know, there are representatives here from the Army Staff to respond to questions and they have been responding as General Menetrey has.

To give you some idea of the equipment posture of the Army Reserve and do it on the basis of dollar value—which is not too satisfactory except that it indicates the magnitude of the problem—overall the Army Reserve has about 63 percent of the peacetime authorized equipment on hand, which equates to a shortage of approximately $1.2 billion.

On the basis of wartime requirements that percentage of equipment on hand is approximately 33 percent, which equates to a dollar value of that end item reportable equipment of approximately $4 billion.

Again the magnitude of the problem and the challenge as part of the total Army equipment problem is significant.

Mr. STRATTON. How many divisions do you have?

General BERKMAN. There are 12 training divisions whose mission in wartime is to operate and conduct the training in the training centers that would be required. To give you some idea of the com-

position of the Army Reserve, the units in the Army Reserve are predominantly in the tactical support increment, combat support and combat service support areas, which are required by the Army.

Thirty-four percent of the Army requirements for tactical support units are in the Army Reserve. Twenty-five percent of the general support forces, which include the training divisions and the other training, transportation, operating the mobilization base, are in the Army Reserve. Fifteen percent of the Army's nondivisional combat and special theater force increments are in the Army Reserve. These are three separate brigades, special forces units and combat engineering units.

In the division increment there is a significant but modest 0.7 percent in the division increment, primarily an armored battalion and a bridge company that are part of the roundout program.

I might say as a result of that significant percentage in the tactical support increment, a significant number of Army Reserve units are high priority and would be required early in the event of deployment and mobilization. There are significant numbers of Army Reserve units identified as part of the Army's portion of the Rapid Deployment Force, predominantly in the combat support and combat service support area.

Mr. STRATTON. Engineer battalions?

General BERKMAN. Engineer units, petroleum distribution units, civil affairs, water supply units, and units in that area.

Mr. STRATTON. Didn't we have one Army Reserve unit, I think it was a post office unit, that went to the Supreme Court when they were ordered to go to Vietnam?

General BERKMAN. I am not familiar with that, Mr. Chairman.

Mr. STRATTON. I think that is right. The only one that got ordered as I recall.

General BERKMAN. I might say as part of the new relationship which has evolved over the past few years of the total Army and total force policy and relationships that are being established by Army Reserves pursuant to the Capstone unit where they know what their gaining command is or units they will be associated with in wartime. The units and members of the Army Reserve are keenly aware of the important role they play as part of the total Army.

Mr. STRATTON. You say their mission is to set up the training centers in the event of mobilization.

Does that mean Fort Dix's and Fort Devens', that sort of thing?

General BERKMAN. That is correct, sir.

Mr. STRATTON. Suppose, and this probably won't happen, but just suppose by some miracle the Congress were to enact the Montgomery-Stratton bill that would set up a limited draft for the the Individual Ready Reserve and in fact suppose further—this is really going all out—that we then decided that it would not be limited, that it would apply to everybody who turned 18, was able-bodied, to go into the Reserve military for 5 months' training and then a couple of weeks of summer for a refresher.

The argument has always been that if we went to that kind of thing, we would not have the personnel equipped to handle the 2 million young men who turn 18 every year.

Would it be a feasible job for these training divisions to man those particular centers?

General BERKMAN. I haven't given that any thought, Mr. Chairman. I would say that these training divisions are Reserve units and consequently the training that takes place is generally 1 weekend a month and 2 weeks during annual training. So the training divisions are not available for an entire period or a long extended period of time.

Mr. STRATTON. I am trying to figure out some way that our Reserves can all do the kinds of things that the Air National Guard does, which is to integrate so closely with the Regular Forces.

In the Navy it is pretty hard to do because you can't get away for 60 or 70 days to serve in a Poseidon submarine, for example, but I wondered whether it is conceivable, since their ultimate mission is training, that they might be available for that kind of service?

General BERKMAN. They are now participating in the training and assisting during their annual training period, performing their training with the current training centers in the Army. Indeed they are doing that sort of thing. The training divisions are augmenting the force at Fort Bragg and at other training centers as part of their relationship.

You know, the gaining command concept has been so successful in the Air Force Reserve and Air National Guard. I think the Army Capstone program is a step in that direction in identifying and then associating Army Reserve units with Active component units focused in their wartime missions and role.

Mr. STRATTON. Jumping from the present attitude of the public and the Congress, General Walker will probably get all the things he needs before the Stratton-Montgomery bill is enacted into law. So you probably don't have to worry too much about it.

General BERKMAN. I hope General Berkman gets all the things he needs, too.

Mr. STRATTON. Will you give us that list. I had the idea you had everything you needed.

General BERKMAN. No, sir. As I indicated, the nature of the equipment shortages in the Army Reserve is substantial and serious.

Mr. STRATTON. We will be happy to have you give us that if you can.

General BERKMAN. Yes, Mr. Chairman.

WRITTEN STATEMENT OF MAJ. GEN. WILLIAM R. BERKMAN

Mr. Chairman and Members of the Committee, it is a pleasure to appear before this committee to discuss equipment procurement with respect to the Army Reserve. I also welcome this opportunity to express appreciation on behalf of all members of the Army Reserve for the support you have provided to improve the readiness of the Army Reserve.

With the advent of the Total Force Policy came recognition of the Reserve Components in a new light. No longer would the Reserve Components be in a "Reserve", or backup role. They must assume responsibilities on a co-equal basis with the Active Components generally to the extent that the Active forces could not be expected to initiate and sustain any type of major conflict without participation of the Reserve Components.

Recognition of this role, however, and widespread implementation of it are two very different aspects, especially under the aura of constrained resources that has

been prevalent since the Total Force Policy was adopted. Nowhere has this become more evident than in the equipment area.

Historically, Guard and Reserve forces have operated for the most part with equipment of the "hand-me-down" variety from the Active Components. When intended to be used solely in a backup role, such a practice was not considered an unacceptable risk to mission accomplishment. Today, however, it is imperative that all units, Active and Reserve, have that equipment with which they will be expected to fight. What is an unacceptable risk, not only to mission accomplishment but to national security as well, is a Reserve Component equipment posture that reflects serious shortfalls or includes equipment which: Is not compatible with that of the other units with which the RC unit will deploy; is not deployable or serviceable due to lack of spare parts or maintenance capability; or is obsolete.

The ultimate goal is for full wartime sets of combat serviceable and compatible equipment to be in the hands of all Selected Reserve units prior to initiating operations after mobilization. Today's fiscal constraints preclude attainment of this goal over the fiscal year 1983-87 program period due to the fact that significant shortfalls, especially of modern equipment, exist in the Active as well as the Reserve Components.

I appear before you this morning not as the Agency head that has the responsibility for Army procurement but rather one of the many interested recipients. Because of this, I am not involved in all of the procurement actions that take place in fielding equipment systems. I will do my best, however, to tell you what the USAR is doing with the designated funding the Congress provided in fiscal year 1981 and fiscal year 1982 and to review our overall equipment posture.

Before going into the details of the execution of the designated funds, I would like to generally cover the status of the USAR in terms of major equipment provided through the Army system. As of September 1981, the USAR had on hand $1.8 billion worth of equipment against a peacetime authorized level of $2.9 billion. Put in percentages, the USAR has 63 percent by dollar value of the peacetime authorized equipment on hand. Measured against wartime requirements, our posture is 33 percent by dollar value of our wartime required equipment level. This does not consider the M1 tank which is reflected in our authorization documents but which we realistically cannot expect to receive for several years. Presently M60 tanks, which is an authorized sustitute for the M1, are in our inventory and would be deployed in case of mobilization.

In the annex to Volume II, National Guard and Reserve Equipment Readiness of the DoD Force Readiness report published Feb 82, OSD provided Congress a projection of equipment issues to the USAR during the period fiscal year 1982 through fiscal year 1985. These projections could change, based on changing priorities and unit adjustments in deployment forces. Examples of the items included in the report and exclusive of the Congressionally designated funding for USAR equipment are as follows:

Item	Fiscal year—			
	1982	1983	1984	1985
UH60A helicopter	0	4	0	0
Recov veh M88	9	7	8	2
Semitrailer BB/cont M872	312	1,030	0	0
Trk 5 ton 6×6	182	400	192	27
Restorer TD206	479	300	34	169
Radio set AN/PRC 77	20	0	122	0
Test set AN/PRM-34	0	27	568	0
Compressor recp 5CFM	19	23	58	0
Pump assy flam 350 GPM (fuel pump)	261	180	0	1

Although this is not an all encompassing list, it does illustrate the types of items being procured against USAR shortages.

USAR equipment requirements are included in the Army Acquisition Objectives (AAO). Issues from the supply system are made in accordance with established Total Army priorities. Priority for issue of the most modern equipment goes to the highest priority, earliest deploying units regardless of Component.

In the past, issues of equipment to USAR units have been inadequate to make real progress in equipping our force. Army Reserve units constitute 34 percent of

the Army's tactical support increment, 23 percent of general support force increment and 15 percent of the non-divisional combat and special theater force increment. The resourcing of these units alone is essential to the sustainability of the combat force. Not until fiscal year 1982 have we begun to show positive growth in overcoming shortages.

Congress provided specific funding directions to improve USAR equipment status in fiscal year 1981 and again in fiscal year 1982. The $25 million in fiscal year 1981 was used to procure communication equipment and other readiness related items. These items are being received now in the USAR inventory against high priority unit shortages. Examples of the items being procured are listed below:

USAR fiscal year 1981 designated procurement

Item:	*Quantity procured*
N04456 Night vis goggles	82
Q54174 Radio set AN/VRC 47	31
X49051 Trk, FL 10,000 lb	56
R11154 Ramp load veh (16,000 pounds)	105
V12552 Tank assy FAB 10,000	138

The fiscal year 1982 budget which included procurement initiatives by the Congress will have a substantially favorable impact on the readiness of the USAR units in the current Rapid Deployment Force-Army (RDF-A) and other early deploying forces. Total fiscal year 1982 funding of $134.75 million for the USAR equipment funded from Army Procurement Accounts corrects the major equipment shortfalls in the RDF-A units and makes some inroads into correcting equipment deficiencies identified as war stoppers. It brings USAR RDF-A units to their required levels of equipment. Examples of the items being procured are listed as follows:

USAR RDF designated equipment procurement

Item:	*Quantity procured*
S10059 semitrailer trk M967 (5,000 gallons)	420
S70159 trailer BB/cont 34T M872	600
T61103 trk tractor 6 x 4 M915	307
S01373 Vinson comsec device	246
T49119 truck, forklift (10,000 pounds)	57

Identification of items to be procured with the additional $34.7 million (included in the $134.7 million appropriated for fiscal year 1982) is being reviewed for procurability. These funds will be directed primarily towards correcting identified equipment shortages that limit our capability early in a conflict. In approximately 30 days this program will be firmed up. The Army Reserve has requested and received project codes that will enable us to track completely the fiscal year 1981 and fiscal year 1982 designated procurements.

Mr. Chairman, this concludes my statement. I am prepared to answer your questions.

Mr. STRATTON. We want to get everybody covered here before we run out of time.

General Bodycombe, you are the Chief of the Air Force Reserve. Can you give us you story of success?

STATEMENT OF MAJ. GEN. RICHARD BODYCOMBE, CHIEF, AIR FORCE RESERVE

General BODYCOMBE. I would love to and thank you for the opportunity and wisdom of the committee to save the best until last. I don't mind if John Conaway gets all the brickbats, but I don't want him to share in all the glory.

The Air Force Reserve is extremely proud of its units and what we do today.

We have, Mrs. Holt, a very fine C-130 unit at Andrews in the RDJTF.

Mr. Leath has the fine 301st TFW at Carswell AFB.

In Florida we have the rescue unit which stands by when the astronauts go into space as they did last Monday and also the outstanding Homestead AFB F-4 unit which did compete in the gunnery meet. We didn't do as well as John's ANG units, but we will try again next year.

We are very proud of our force, Mr. Chairman. The Regular Force has been good to us. We do have shortages as do our friends in the Air Guard, and we will make those available to your committee.

Also we could use some additional A-10's. We do have a 24 A-10 unit at Barksdale, but the extra 6 airplanes that were given to us were for training purposes to train Air Guard and Air Force reservists.

Three other squadrons are being held at 18. In the F-4 we do see some light at the end of the tunnel. Both of Mr. Leath's units in Texas will go soon from 18 to 24 UE.

It is in the airlift business where we are short. Over half the C-130 airplanes are 25 years old or older. They are venerable airplanes and we do fly them throughout the world, in Central and South America, sharing that sensitive part of the world today with the Air Guard.

We would like to see some money spent on avionics and possibly reengining of the C-130's.

WRITTEN STATEMENT OF MAJ. GEN. RICHARD BODYCOMBE

Mr. Chairman and Members of the Committee, thank you for the opportunity to appear before this committee to present the Air Force Reserve manpower program for fiscal year 1983.

It is with great pleasure that I report that the Air Force Reserve attained an end strength of 61,565 in fiscal year 1981, exceeding its programmed end strength of 60,754. This accomplishment was made possible through the dedicated efforts of all our Reserve members.

For fiscal year 1983 we are requesting an average Selected Reserve strength of 66,000 as summarized in Table I. For 1982, the Congress approved an average strength level of 62,800, however, adjustments in the Appropriation Bill reduced this level to 62,571. These strengths will enable the Air Force Reserve to support the Air Force mission and provide a ready and well-trained force to meet our wartime mission requirements. Briefly, our mission is to develop and maintain a Reserve of trained, operationally ready combat units and individuals who are immediately available for active duty in time of war, national emergency, or to counter other threats to our national security. To accomplish this mission, the Air Force Reserve conducts a comprehensive program of recruitment, training, and operations.

Again this year, I am proud to state that the Air Force Reserve remains ready to fulfill its mission. All Reserve units can be mobilized in 24 hours and deployed within 72 hours. The key to Reserve effectiveness has been, and continues to be, modern equipment and meaningful missions.

Modernization of the airlift equipment will continue with the introduction of our first C-130H unit at Dobbins AFB, GA, and our fourth A-10 unit at Richards-Gebaur AFB, MO. These actions and the shifting of C-130 assets will enable us to phase out some older, less capable airlift aircraft and allow us to establish ourselves at Peterson AFB, CO., which should be a very lucrative recruiting area. At the close of the year, only one piston-powered C-7 unit will remain in the Reserve inventory. This unit will be the first candidate for modernization in the future. I would like to point out to the Committee that after the C-130H conversion the Air Force Reserve unit at Dobbins AFB, GA, will be equipped below the minimum standard, leading to less than optimum cost effectiveness and operational efficiency.

In the fiscal year 1981 Defense Appropriation Act, only six C-130H aircraft were designated for procurement by Congress. This is two short of the eight aircraft at our other equipped C-130 units. Because of this two additional C-130H aircraft would be highly desirable in order to upgrade the Dobbins unit to the minimum standard.

We appreciate that Congress has provided additional tactical airlift aircraft for the Air Reserve Forces. I'm referring to the 38 additional C-130H aircraft procured by Congress since 1978; however, the Air Force Reserve has received only six of these aircraft.

A logical and systematic approach for replacing seven C-130A model units in the Air Force Reserve should be established in order to prevent a crisis replacement program in future years. By the end of the present fiscal year, the C-130A model aircraft will have an average age of 24.9 years. If Congress again appropriates dollars to procure new C-130 aircraft in the fiscal year 1983 Defense Appropriation Act, I am requesting a fair share to replace a like number of C-130A models.

As of January 1982, all of our equipped flying units were combat ready with the exception of five units converting to newer aircraft. These units are:

One A-10 unit converting from A-37's (New Orleans).

One C-130 unit converting from C-123's (Rickenbacker).

One C-130 unit converting from A-37's (Youngstown).

One F-4 unit converting from C-130's (Bergstom).

One F-4 unit converting from F-105's (Carswell).

All six of our associate strategic airlift wings were combat ready. Additionally, each of the three KC-135 tanker squadrons remains in combat ready status and has crews standing daily Single Integrated Operational Plan alert. Along this line, the first SAC associate unit at Barksdale AFB, LA in the newly acquired KC-10 was activated 1 November 1981, but has not yet begun reporting readiness.

As you know, one of the main reasons we have been so successful in maintaining readiness in the Air Force Reserve is our Air Reserve Technician (ART) program. These dual status individuals perform in both a civilian and military capacity in their units. During the week, they provide day-to-day management and administrative continuity. During active and inactive duty training periods, they perform as military members of the units, responsible for the training of the other Reservists. The high skill level of this technician force coupled with the stability of these employees are two factors critical to sustaining our operational readiness. This stability is one of the major reasons we have been able to attract and retain individuals who possess the highly technical skills needed to insure such readiness. However, we could experience difficulty in expanding our roles and missions if the Air Force civilian ceilings are lowered, as the technicians are included in these ceilings. Since the militarization of technicians didn't prove successful in the Air Force Reserve, we strongly endorse adjustments to accommodate the use of technicians.

In several areas, as Reservists train, they support requirements that would otherwise have to be fulfilled by active force resources. These are called by-product accomplishments because a productive mission is performed in conjunction with training requirements. For example, in fiscal year 1981, Reserve crews of equipped units airlifted 6,665 tons of cargo, flew 100,467 passengers and air dropped nearly 39,300 troops as a by-product of their normal training missions. In addition, Air Force Reserve associate C-141 and C-5 units flew more than 78,600 hours, and our associate aeromedical evacuation unit flew more than 3,410 missions, airlifting more than 86,600 patients. We also share rotational duty in Panama with the Air National Guard in support of United States Southern Command with six C-130 aircraft and seven crews six months each year. The performance of these missions exemplifies the Total Force team in action.

Reservists provided outstanding support in a new mission providing rescue support for launches and recovery of the Space Shuttle mission at Cape Canaveral, FL. With regard to hurricane tracking, I should emphasize that, for the sixth consecutive year, our weather reconnaissance group flying out of Keesler AFB, MS accomplished at least 70 percent of all hurricane missions in the Gulf of Mexico, the Atlantic and the Caribbean; last year we tracked 10 hurricanes/storms.

In fiscal year 1981, Air Force Reserve rescue and recovery units flew 80 search and rescue missions, logged over 525 hours and were officially credited with saving 45 lives. A particularly noteworthy event was the MGM Grand Hotel fire in Las Vegas where our rescue units were credited with 17 saves and one assist. Our UC-123K units continued to provide the only aerial spray capability in the Air Force. Although the C-123 is being phased out, a few UC-123K's are being kept to provide spray capability until the completion of a research and development project to modify C-130's for aerial spray. Finally, the experience and skills of Air Force Reserve Personnel are valuable assets in supporting Civil Air Patrol (CAP) programs such as cadet encampments, aerospace education workshops, and a wide variety of other special CAP activities.

Condor Redoubt 81, the fifth in a series of annual mobilization exercises, was an outstanding success. Some 59,000 Reservists participated, with about 3,000 deploying

to other bases. Nearly 200 Reserve aircraft were involved in the total exercise carrying cargo and people, and conducting fighter and rescue operations in a variety of locations in the United States and overseas. Nine hundred medical personnel were part of the Reserve's most extensive training and testing of medical people and the aeromedical evacuation system. In addition, in conjunction with this exercise the initiation and implementation of the first comprehensive mobilization test of individual Reserve resources was accomplished. Simulated messages were sent to Individual Mobilization Augmentees, Individual Ready Reserve members and retired regulars; the response rate was over 97 percent.

At present, Reservists provide almost 50 percent of the aircrews and approximately 40 percent of the maintenance for MAC's C-141 and C-5 strategic airlift fleet. More than 30 percent of all tactical airlift is provided by the Air Force Reserve. Fifty percent of the crews for SAC's new KC-10 tanker/cargo aircraft will be Reservists. Also, with the acceptance of the A-10 fighter, Reservists are flying new first-line fighter aircraft. Currently Reservists contribute almost 60 percent of the Aircraft Battle Damage Repair personnel in six Air Force Logistics Command gained Combat Logistics Support Squadrons. The Air Force Reserve also provides 13 percent of all Air Force civil engineers, 10 percent of the RED HORSE manpower and equipment, and 47 percent of the MAC aerial port personnel.

In the Air Force Reserve we have two basic resources—equipment and people. People are by far more important. Only through their dedication to the role of citizen-airman can we accomplish our primary mission of training for mobilization. Their talent, personal sacrifice and dedication to mission accomplishment were again proven during Condor Redoubt 81. The wide scope and complexity of this exercise and the professional manner in which it was accomplished attest to out readiness and "can do" spirit as a highly capable force within our country's defense structure. With the continued contributions of time, talent and energy, we will remain a mainstay to the American way of life.

In addition to our unit program, the Air Force has a successful program to provide trained Individual Mobilization Augmentees (IMA's) to active force units upon mobilization. IMA requirements are identified by grade and skill as part of the annual wartime manpower planning process of the Air Force. IMAs who are members of the Selected Reserve are assigned to specific positions established inactive force organizations and are trained and supervised by the active force.

Reservists assigned to Individual Mobilization Augmentee positions are fully qualified in their Air Force specialties. As a result, these Reservists in fields as diverse as medical, legal, research engineering, maintenance and intelligence are able to assist with the day to day mission of their organization while they are on inactive duty and active duty training periods. For example, some of the physicians performing physicals or prescribing medication on a typical Air Force base are IMA's performing their monthly or annual training. As another example, IMA's in the intelligence field are producing standardized critical area intelligence summaries for postulated missions into selected countries. These summaries cover data on geography, population, weather, military capability, and lines of communication. In addition, intelligence IMA's support the Airborne Warning and Control System by analyzing Soviet electronic countermeasure systems against the E-3A Sentry aircraft.

We fully expect to attain our fiscal year 1982 programmed strength of 10,102 IMA's in Pay Groups A, B and D. For fiscal year 1983, we are requesting an average strength of 10,832. The total Air Force requirement for approximately 18,615 wartime IMA positions is indicative of the importance attached to this program. For the past few years, we have been working toward increased manning of these positions consistent with our ability to recruit. This year we are placing added emphasis on recruiting IMA's including the use of bonuses in selected enlisted skills.

Concerning overall manning, I mentioned earlier the very favorable manning posture the Air Force Reserve continues to maintain. We started fiscal year 1981 with a strength of 58,921 and ended the year with an on-board strength of 61,565. This was a net gain for the year of 2,644 people or 4.5 percent. I believe this attests to our ability to attract and retain motivated and dedicated young people. The combination of recruiting efforts and our retention program made it possible for us to exceed our programmed end strength. At the same time we increased the quality of our Force as evidenced by the fact that 95 percent of all nonprior service enlistments were high school graduates. This was a six percent increase over fiscal year 1980. Our unit commanders at all levels have taken an active recruiting role. With their enthusiasm and hard work, combined with the excellent performance of our recruiting force, and a continued command emphasis on retention, we will continue to meet our programmed end strength.

As in the past the recruiting of qualified personnel in critical skill areas continues to be difficult. It is in these areas that we have expanded our present incentive pro-

gram into one that better recognizes the economic realities of recruiting and retaining highly skilled personnel. We are currently manned at the 91 percent critical skill level in the unit program. The fiscal year 1982 funds appropriated by Congress for this purpose will allow the USAF to improve operational efficiency. The fiscal year 1983 appropriation of 2.9 million for enlistment/reenlistment bonuses will have a meaningful effect on recruiting and retention in these skills. The affiliation bonus is a tool that has long been needed by the USAFR. With these resources, we will be able to enlist and retain prior service personnel who have already received extensive training and experience in the critical skills we require.

In summary, while the wartime role of the Air Force Reserve continues to expand within the Total Force, we hope to continue to modernize our equipment, improve our management structure and recruit the people needed to assure a fully responsive, combat ready force.

This concludes my statement, Mr. Chairman. I will be glad to answer any questions the Committee may have.

TABLE I.—AIR FORCE RESERVE PERSONNEL

[In fiscal years]

	1981 (actual)		1982		1983		1984	
	End	Average	End	Average	End	Average	End	Average
Flying units	33,575	32,807	34,198	33,615	34,530	34,341	34,765	34,472
Mission support units	16,991	15,944	17,322	16,910	18,762	18,506	20,541	20,175
Individuals [1]	(1)8,774	(2)8,565	(3)10,102	(3)10,102	(3)10,832	(3)10,832	(3)10,832	(3)10,832
Statutory tours	148	143	171	171	178	178	178	178
Recruiters	271	266	301	301	301	301	301	301
Art test	64	113	0	0	0	0	0	0
Nonprior-service enlisted program	1,261	1,019	1,270	1,100	1,625	1,470	1,625	1,470
Nonprior-service enlisted personnel awaiting training with pay	477	343	372	372	372	372	372	372
Total selected reserve	61,565	59,198	63,736	62,571	66,600	66,000	68,614	67,800

[1] Pay Group "D" individuals ((1) 690, (2) 795) are not included in fiscal year 1981, but ((3) 1,000) are included effective fiscal year 1982 and thereafter since they become a part of the selected reserve effective fiscal year 1982.

TABLE II.—AIR FORCE RESERVE FORCE STRUCTURE, FLYING UNITS

	End of fiscal years		
	1981	1982	1983
Equipped units:			
C–130 tactical airlift	12	13	14
C–123 tactical airlift	3	1	0
C–7 tactical airlift	2	2	1
Aerospace rescue and recovery	4	4	4
WC–130 Air Weather Service	1	1	1
CH–3E Special Operations Force	1	1	1
AC–130 Special Operations Force	1	1	1
KC–135 strategic refueling tanker	3	3	3
A–37 tactical fighter	1	0	0
F–4 tactical fighter	3	5	5
F–105 tactical fighter	2	1	1
A–10 tactical fighter	2	3	4
Total equipped units	35	35	35
Associate units:			
C–141 strategic airlift	13	13	13
C–5 strategic airlift	4	4	4
C–9 aeromedical evacuation	1	1	1
KC–10A tanker cargo	0	1	1
Total associate units	18	19	19
Total units	53	54	54

TABLE III.—AIR FORCE RESERVE FORCE STRUCTURE, MISSION SUPPORT UNITS

	End of fiscal years		
	1981	1982	1983
Combat logistics support squadrons	6	6	6
Aeromedical evacuation squadrons/flights	21	21	21
Medical service units	13	15	15
Aerial port squadrons	50	51	52
Civil engineering squadrons/flights	35	37	38
Civil engineering squadron (heavy repair)	1	1	1
Communications security squadrons	0	1	1
Numbered air forces (reserve)	3	3	3
Total	129	135	137

Mr. STRATTON. Do you operate with the Regular Forces, Regular Air Force in the same way that the Air Guard does?

General BODYCOMBE. Yes, sir, we do. We have similar kinds of units. That associate program that I mentioned is unique. It is only in the Air Force Reserve. It is one-third of our business. Eighteen flying squadrons of the big airlifters. We provide just the crews and maintenance force. Although our units are similar in nature we don't actually own the airplanes. They are owned by the Military Airlift Command.

All the other units are images of the Regular Force. They set the standards and they expect us to meet those standards. The Guard is very strong in air defense. We don't do that. Their tactical reconnaissance units are superb. With big radar advancement they are able to bring home the photographs. We don't do that.

But we are in the weather reconnaissance business. The people in Florida, along the gulf coast, and Texas are very impressed when storm season comes along. They are pleased to see the Air Force Reserve Hurricane Hunters penetrate those storms. We provide 70 percent of the hurricane watch in the Caribbean and South Atlantic.

Mr. STRATTON. The Navy used to have a female hurricane pilot. Do you have any women pilots?

General BODYCOMBE. Yes, our ladies do fly the transport airplanes, the big airlifters. We have eight female pilots. On the Hurricane Hunter we do have a female "soude" operator. She shoots out the device that falls in the water and measures what is inside the storm. She is a very bright and brave lady.

We have the rescue units like John Conaway's. We are not quite as substantially equipped.

I am glad you asked me the question earlier about the two National Guard squadrons. They are good in New York and California. They are split. They have the tanker aircraft and the helicopter. I have two rescue units on the west coast, one in southern California and one in Portland. They are very unique. Portland only has helicopters and the March AFB unit has only HC-130H aircraft.

As you may remember, when Mount St. Helen blew the first time, we rescue 17 American citizens within 3 hours. They are using the HH-1, a very small and outmoded helicopter.

Of the HC-130H tankers that we own, less than half of them are not really tankers. They are just rescue versions. They are not equipped yet to perform the tanker mission. We have money in the budget, and some day I would like to see those two squadrons become fully dual capable as the squadrons we have at Selfridge, which covers the Great Lakes, and Homestead, which covers the South Atlantic and Caribbean.

The Air Force recovery and rescue service with those six Air Force Reserve rescue squadrons represents over 30 percent of the rescue capability of the Air Force every moment of every day.

Mr. STRATTON. Do you have any part in the fighter interceptor role?

General BODYCOMBE. Not the interceptor, sir. That is John Conaway's and he does it very well.

We have the fighter attack role. By the middle of the decade we will have 11 squadrons including our first F-16 squadron just announced last year. It will trail the South Carolina Air Guard by three-quarters. We will put ours at Hill Air Force Base where we have the last remaining F-105 Squadron, the famous fighter of the Vietnamese war. That will be our last squadron and that will be equipped with F-16's. That will give us 11 fighter attack squadrons.

Mr. STRATTON. You sound as though you are in pretty good shape. If you have a list of things that you would like, we will be happy to get that.

General BODYCOMBE. Yes, sir, I will be pleased to submit that.

[The following information was received for the record:]

HIGHEST PRIORITY EQUIPMENT NEEDS

First, let me reiterate that the Air Force Reserve is a partner in the Air Force POM process, and I fully support the Air Force input to the fiscal year 1983 President's Budget. Should there be funds appropriated over and above the formal Air Force budget request to alleviate shortfalls in Air Force Reserve equipment, the most needed items would be ECM equipment, radar warning receiver updates and instrument landing system modifications for our fighters. Cargo trucks, fuel trucks, and utility vehicles are also needed for our support units. Cost for these items would be approximately $230 million fiscal year 1983 dollars) depending on factors such as production rates, lead times, and contract closing cost and limitations.

If additional funds were made available for aircraft procurement, the Air Force Reserve could logically and systematically phase in those aircraft as follows:

1. Increase the number of aircraft in those units which do not have the desired notional PAA.
2. Modernize fighter and airlift units that possess older, less capable equipage.
3. Increase the number of tactical airlift units in an effort to reduce the tactical airlift shortfall.

Mr. STRATTON. Any questions of General Bodycombe?

Mr. Klein, you are a pilot.

Mr. KLEIN. General, I think all of these lists that have been asked for, since we will be marking the bill fairly soon, we should have in good time.

General BODYCOMBE. Yes, sir, we will.

Mr. STRATTON. Thank you very much.

That leaves General Crist of the Marine Corps and he is actually the last.

STATEMENT OF MAJ. GEN. GEORGE B. CRIST, DEPUTY CHIEF OF STAFF FOR RESERVE AFFAIRS, HEADQUARTERS, USMC

General CRIST. The last to testify, but the first to fight, Mr. Chairman.

First, I take issue with Gen. Milnor Roberts' testimony this morning when he said the Marine Corps Reserve can't fight and can't mobilize. Ring the bell and you will find out.

We are in pretty good shape. Selected Reserve end strength for the first time passed that of 1950 when we went into the Korean war. As strength increased so did quality; 79 percent high school graduates less Armed Forces qualification test group IV's.

Using the same standards as applied to active units, 56 percent of the Reserve units tested were fully combat ready; 81 percent of the Reserve units tested were deployment ready; 215 units conducted mission-oriented training on weekends away from their centers. Nearly 15,000 reservists participated in joint, combined and service field exercises. I think we are combat ready.

However, I must admit we do have some problems. Aviation readiness is limited by aging aircraft, shortfalls, incompatibility and near obsolescence. Material readiness was plagued by serious shortages.

With regard to material readiness, the Reserve is currently short $546 million in equipment and $138 million short in secondary items. The latter includes such things as repair parts, individual equipment, engines, transmissions and the like.

On the air side of the house the most critical shortages are in the KC-130—the transport refueler—and the AH-1, attack helicopter communities. With the addition of the four KC-130's the Congress had the foresight to give us last year, I can start to finish off the

squadron at Glenview, Ill., which, since it has been organized, has never had its authorized number of aircraft.

In order to complete the squadron at Glenview and start a second squadron at Stewart Airfield in New York, I still have a shortfall of 17 KC-130 aircraft. The single Reserve helicopter squadron in Atlanta has only 8 of the 24 aircraft it is authorized.

There is an urgent need to increase the helicopter antitank capability in the Marine Corps and this is an ideal mission for the Reserve.

As far as doing something about these shortages, we do have plans. The fiscal year 1983 provides for 5.2 percent reduction in the equipment shortages and a 30-percent reduction in the secondary items shortfall.

If I get the money people say they are going to give me, our equipment shortfall will be reduced by 1987 by 75 percent. The secondary item shortage will remain the same, however. There is absolutely nothing I can do about the aircraft shortage. There are not the dollars to even think about it until maybe 1985. So, that is where we stand, sir.

WRITTEN STATEMENT OF MAJ. GEN. GEORGE B. CRIST

Mr. Chairman, distinguished members of the Committee: It is a privilege to appear before this committee to present the annual report on the posture of the Marine Corps Reserve.

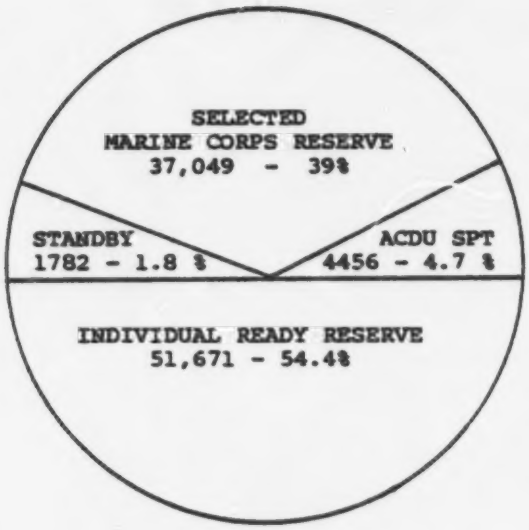
I am pleased to report that the posture of the Marine Corps Reserve is solid. We continue to show steady, demonstrable progress in almost every measured area. As satisfying as this situation is, the question must be asked, however, whether this is enough. With one third of the available manpower and 25 percent of the structure, the Marine Corps must rely heavily on its Reserve Component to meet the totality of wartime and contingency requirements. This dependence in turn is generating a widening range of Reserve contingency missions within increasingly stringent response parameters. We believe the pace needs to be accelerated if the Reserve is to meet this new challenge. What was not possible prior to fiscal year (FY) 1981 is within the realm of achievability now. The administration has provided the impetus and Congress the priority and wherewithal. Fiscal Year 1982 is the year of transition as the Marine Corps Reserve steps out smartly.

In this statement I have tried to lay out for you a map of the path we intend to travel - what has been accomplished to date - what we intend to do with your help - and what remains to be done.

ORGANIZATION

The rock upon which all our planning rests is the 94,958 active Marine Corps Reserve. It is composed of the Selected Marine Corps Reserve (SMCR), the Individual Ready Reserve (IRR), the Standby Reserve and full-time Reserve (FTS) and

active duty personnel who will mobilize with the Reserve component.



Selected Marine Corps Reserve (SMCR)

The preponderance of the SMCR consists of the 4th Marine Division, the 4th Marine Aircraft Wing (MAW), and the 4th Force Service Support Group (FSSG).

- Located in 45 states at 178 sites, the Division/Wing Team (DWT) is a balanced force of combat (35 percent), combat support (39 percent), combat service support (24 percent) and staff (2 percent). The population is similarly well balanced. The ratio of officers to enlisted is 1:14. Officers make up 7 percent of the population with 40 percent of the officers captains or below. On the enlisted side, 89 percent of the personnel are sergeants or below.

The remainder of the Selected Reserve consists of Individual Mobilization Augmentees (IMA) and full-time support personnel.

- Individual Mobilization Augmentees are members of the Selected Marine Corps Reserve who are in a mandatory training status, but who are not members of Selected Reserve units. These are individuals who are preassigned to mobilization billets which must be filled on or shortly after M-Day and whose mobilization duties are of such a nature that the individuals must be available immediately upon mobilization. Mandatory training assemblies and annual active duty training are required. They will be issued mobilization orders which will be executed when authorized and directed.

- Full time support is provided by a combination of reservists on active duty and regular personnel who assist in organizing, recruiting, administering, instructing, and training the Reserve Component.

Individual Ready Reserve.

The IRR consists of members of the Ready Reserve not assigned to the Selected Reserve and not on active duty. These reservists may be mobilized: (1) to meet filler replacement requirements of active units or mobilized Reserve units, or; (2) to form new active units, or; (3) to replace combat losses.

- A percentage of the IRR will be preassigned to designated wartime billets. The prerequisites for preassignment are that the individual can maintain the capability to immediately assume duties upon mobilization with little or no preparation other than periodic two week annual refresher training and that the billet must be filled shortly after M-Day. Preassigned IRR's will be issued premobilization orders for execution upon statutory authorization.

Standby Reserve

The Standby Reserve is divided into active and inactive categories.

- The Active portion is composed of reservists who: (1) are completing their military obligation; (2) are being retained in an active status under Section 1006, title 10, U.S.C. (at least 18 years but less than 20 years of qualifying service for retirement), or; (3) are temporarily assigned to the Standby Reserve for hardship or other cogent reason with the expectation of being returned to the Ready Reserve.

- Inactive Standby Reservists are members who are not required by law or regulation to remain as members of an active status program, but who: (1) desire to retain their Reserve affiliation in a nonparticipating status; (2) have skills which may be of possible future use to the Marine Corps; and (3) do not volunteer for assignment to, or having so volunteered have not been assigned to the Active Status List of the Standby Reserve.

MISSION

To support the assigned wartime and contingency roles and missions of the Marine Corps, the most probable employment roles for the Active Reserve will be as follows:

- Selected Marine Corps Reserve. Units of the SMCR will be utilized to: provide trained units to selectively augment and reinforce the active force in order to fill three Marine Amphibious Forces (MAF's) at full wartime structure; provide a Marine Amphibious Brigade (MAB) for independent deployment; and provide a nucleus for

reconstitution of a fourth Division, Wing, and FSSG. If augmentation and reinforcement are not ordered, the Selected Reserve will generate a fourth Division/Wing Team. Individual Mobilization Augmentees will be utilized to provide trained individuals to fill key mobilization billets at M-Day.

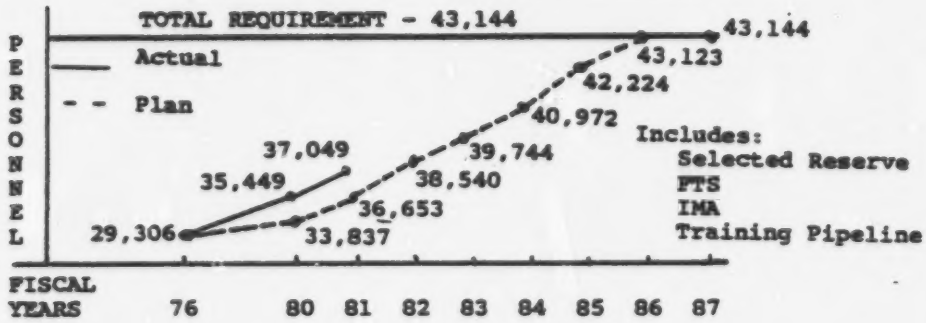
- Individual Ready Reserve (IRR) and Standby Reserve

Members of the IRR and Standby Reserve will be the prime source to provide qualified individuals to fill shortfalls in active and Reserve units and expand the supporting base to meet wartime contingency requirements.

PERSONNEL READINESS

Selected Marine Corps Reserve(SMCR). SMCR end strength has grown steadily since FY-76. By the end of FY-81 the strength had climbed to 37,049 (10 percent over the goal). The present plan is to achieve wartime strength by FY 86-87.

TOTAL SELECTED RESERVE MANPOWER PLAN



During FY-81 the Marine Corps Reserve was successful in improving the quality of the force as we increased the quantity. There was an 8 percent increase in the number of high school graduates recruited in FY-81 (84 percent for FY-81 versus 76 percent for FY-80). The Marine Corps Reserve population now contains 79 percent high school graduates

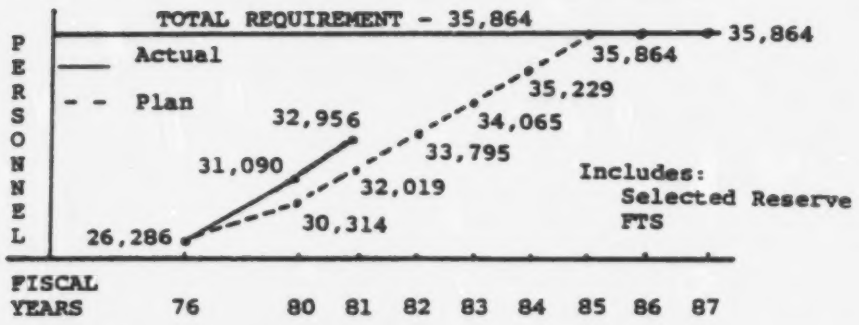
overall (6 percent increase over FY-80) and 14 percent have two years of college or more. Mental Group IV comprised only 9 percent of the total SMCR population. In FY-81, non prior service (NPS) accessions in Mental Group II increased 9 percent and Mental Group IV accessions decreased 15 percent.

Minorities represent 21.8 percent (17 percent black). This is a decline of 1.9 percent from FY-80. Women comprise 3 percent; no appreciable change from FY-80.

Unit Strength

Unit strengths increased 1,866 over FY-80. These improvements are due to an 18 percent decline in attrition since FY-75; increased first term retention (55 percent for FY-81 versus 52 percent in FY-80 and 9.1 percent in FY-75); increased career retention (94 percent for FY-81 versus 88 percent in FY-80); and reduced Initial Active Duty for Training (IADT) losses (5.6 percent in FY-81 as compared to 12 percent in FY-80; and 20 percent in FY-77). These positive trends are expected to continue in FY-82 and FY-83.

UNIT SELECTED RESERVE REQUIREMENT

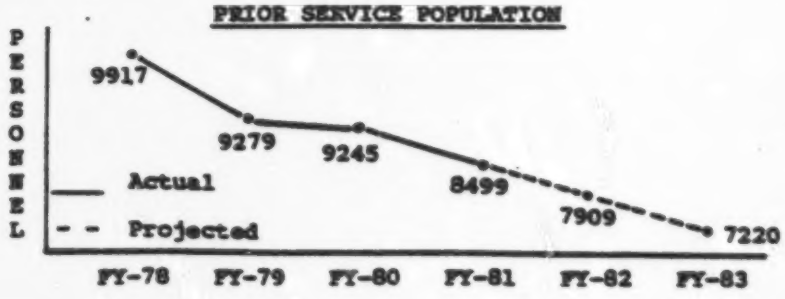


- Grade and Skill Shortages. As unit strength increases, grade and skill shortages are emerging as major inhibitors to increased personnel readiness. For example,

approximately 30 percent of the 4th Marine Division units are reporting degraded readiness for this reason. Some examples of areas experiencing the greatest shortfalls include Data Communications, NBC, Utilities, Electronics Maintenance, Aircraft Maintenance, Avionics, Aviation Ordnance and Air Control. The primary contributing factors to this disturbing problem are non prior service attrition and a continuing decline in the prior service population.

-- Non prior service attrition. Non prior service attrition in FY-81 averaged 6.7 percent of the total Selected Reserve population. While this is down 5.6 percent for FY-81, it still represents an unacceptable loss of 2,489 trained individuals. Our studies indicate the primary causes for these losses are: lack of individual identity with the parent Reserve unit; employment and family conflicts; and lack of creativity and imagination in Inactive Duty Training.

-- Prior Service Decline. There has been a 10 percent net decline in the unit prior service population over the past 4 years. Of these, 4.3 percent were lost to the IRR in FY-81. This represents an actual loss of 1,418 prior service reservists. If this negative trend continues, the prior service population is projected to decline by 27.2 percent through FY-83.



Initiatives. The Marine Corps' goal is to increase end strength to wartime requirement, achieve the proper number and mix of grades and skills required for mobilization, improve retention, and improve the quality of the force. To ameliorate the skill shortages and achieve the goal of 100 percent wartime strength, a vigorous attrition management program will be instituted, bonus utilization maximized, recruit tracking improved, retraining opportunities expanded and a comprehensive prior service recruiting program inaugurated.

- Attrition Management Program

-- Unit Sponsorship Program. We have found that many of our non Expiration of Obligated Service (EOS) losses occur while individuals are undergoing IADT or shortly after returning to their home towns. To overcome this problem, a unit sponsorship program was introduced in FY-81. This program ensures communication between the unit and the individual during the entire period of IADT.

-- Revitalized Unit Retention Program. In years past SMCR units were directly responsible for recruiting prior service Marines. This detracted from the personnel retention efforts. Beginning in FY-82, units will no longer be solely responsible for recruiting prior service Marines and can now concentrate on retaining their quality Marines in units.

- Recruit Tracking Improvement. In FY-82 the Marine Corps Reserve instituted an Entry Level Tracking System designed to: (1) easily identify and monitor prior and non prior service fill and recruiting requirements for the Selected Marine Corps Reserve (SMCR); (2) effectively plan

and monitor the utilization of formal and informal schools to support SMCR non prior service training requirements; and (3) exercise central control over the assignment of military occupational specialities (MOS's) and school quotas to Reserve accesssions. In FY-83 the system will be enhanced through automation. To humanize the system, selected Reserve full-time support personnel will be assigned to liaison duty at recruit depots and commands which provide entry level training to monitor, manage and track reservists on IADT.

- Maximize Bonus Utilization. The Marine Corps Reserve is presently 2,900 Selected Reservists short of the wartime requirement. Total manpower, however, only represents part of the equation. It is equally essential that the proper mix of skills and ranks be attained. Neither can be accomplished without a full range of incentives to recruit and retain the necessary Reserve manpower.

-- Education bonus. Since the inception of this bonus in late FY-79, utilization has increased 300 percent. In FY-81 this bonus was over subscribed by 166 percent. Through the first quarter of FY-82, 303 Reserves have enlisted for this bonus; more than two and one half times the total usage in FY-81 (110). These dramatic increases are a direct result of the Congressional action in FY-81 to increase the bonus from $2,000 to $4,000.

-- Enlistment bonus. The performance has generally been disappointing.

FY-79	FY-80	FY-81
113	88	174

Commencing in FY-82 we raised the maximum from $1,500 to

$2,000. It could be made more attractive if reenlistment bonuses could be offered for either three, four, five, or six year enlistments as in the case of the active force.

-- Reenlistment bonus. The reenlistment bonus is not working. Performance from FY-79 through FY-81 has been flat, achieving only 50 percent of the goal we had hoped to attain.

FY-79	FY-80	FY-81
438	411	384

This poor performance is due to the fact that the dollar amount is insufficient. This is further exacerbated by the requirement to spread the payments out over the term of enlistment. For example, a reservist reenlisting for six years would receive a $900 initial payment and thereafter $150 a year for six years.

- Expanded Training Opportunities. Additional resources have been provided starting in FY-82 and FY-83, which will afford an individual the opportunity to retrain in a short occupational field or increase job satisfaction through skill progression training.

- Prior Service Recruiting Program. We have relied on passive recruiting by Reserve units to attract prior service Marines and this approach has not worked. The decline in prior service strength is directly attributable to the lack of full-time, trained Reserve recruiters. A new prior service recruiting program has been inaugurated to solve this problem and ameliorate the skill and grade shortage problem.

-- The program has five major elements: centralized management; decentralized execution; a referral system;

incentives; and a reporting feedback system. Management will be centered at the Marine Corps Reserve Support Center in Kansas City, Kansas. Decentralized execution will be accomplished by 184 full-time Reserve recruiters operating in 14 regions out of 39 separate locations. A multi-source overlapping referral system will generate the leads necessary to satisfy SMCR units' prior service grade and skill requirements. A closed cycle reporting and feedback system has been developed that provides a vehicle through which all echelons can monitor, manage and redirect or refine the program in order to meet annual goals.

-- Congress has provided two of the vital ingredients necessary for the success of the program, full-time Reserve recruiters and additional funds.

Individual Mobilization Augmentees

In FY-81, over 200 individual Selected Marine Corps Reserve personnel were assigned to and trained in the billets which they will fill on mobilization. We expect to preassign an additional 700 during FY-82. Each IMA will be required to participate in at least two weeks of Annual Training Duty. Most IMA's will be required to attend 12, 24, or 48 inactive duty training assemblies dependent upon the amount of additional training required in peacetime to ensure immediate and effective performance of duty when called to active duty. Individual Mobilization Augmentees are preassigned to such diverse and demanding billets as Fleet Marine Force staffs, Marine Corps Bases and Air Stations, mobilization processing facilities, major headquarters, the Selective Service, other service and joint activities, and Defense agencies.

Individual Ready Reserve (IRR)

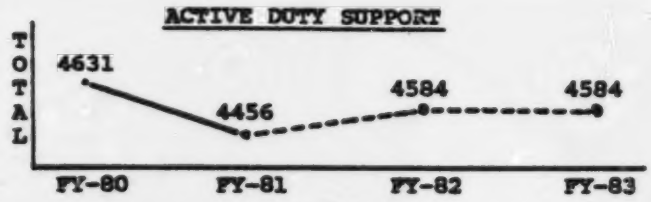
The Marine Corps goal for the IRR is to have sufficient pretrained personnel to fill 100 percent of the time-phased wartime requirement. The FY-81 end strength of 51,222 exceeds the M-Day to M+30 aggregate mobilization fill requirements. Minimal skill degradation has occurred since over 50 percent of the IRR have been off of active duty less than one year. The greatest demand for individual fillers upon mobilization will be in the ranks of captain and below, and sergeant and below. Sixty-one percent of the officers are captains and below while 97.3 percent of the enlisted are sergeants and below.

While the overall picture is generally healthy, the IRR population has declined 13 percent in the last three years. This is exacerbated by a shortfall of approximately 4,500 primary skills needed to meet the wartime requirement within some 35 critical military occupational specialties (MOS's). Areas where the greatest shortages exist include Data Communications, Transportation, Data Systems, NBC, Military Police, Electronic Maintenance, Aviation Ordnance and Air Control. Reinstatement of the IRR reenlistment bonus is needed to provide the essential monetary incentive to retain those critical mobilization skills which otherwise would be lost. In FY-81 the IRR reenlistment bonus achieved 210 percent of the original goal. Through this program, 1,051 reservists were retained in the IRR in a six month period.

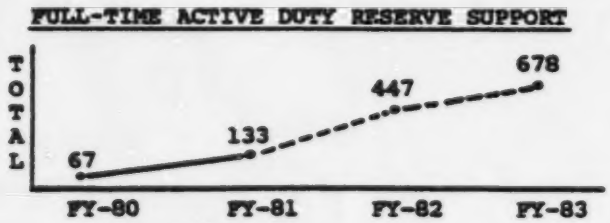
Active Duty Support Personnel. The Marine Corps' goal is to provide adequate numbers of full-time support personnel to assist in organizing, administering, recruiting, instructing, and training the Reserve component in order to

sustain mobilization readiness, modernization, and expansion.

- Active duty personnel will be assigned in the numbers which will ensure a continual infusion of active force experience and expertise into the Reserve, while fostering an understanding of Reserve capabilities and employment potential within the active component. The FY 83-87 program includes increases in the number of Active Duty Support personnel to accommodate the planned growth in the Selected Marine Corps Reserve.



- Reserve full-time support personnel on active duty will be increased to the levels and ranks necessary to satisfy requirements which would otherwise have to be met by active duty full-time support. The FY-83 program increases the number of Reserve full-time support personnel to accommodate the growth of the SMCR Division, Wing, and Force Service Support Group.



TRAINING READINESS

To improve readiness, the exercise program is being expanded in FY-82. More mission oriented training will be conducted away from home centers and a greater number of units will undergo readiness testing. Increased emphasis will be placed on the integration of Reserve units into active unit schedules on a year-round basis. The mobilization readiness of individual reservists will be improved by: (1) placement of training emphasis on preassigned key mobilization manpower; (2) training individuals to meet mobilization requirements; and (3) training with Regular counterparts.

To attain these goals, exercise funding was increased in FY-82 and increased funding is again requested in FY-83.

Selected Marine Corps Reserve Units. Training readiness gauges the capability of our Reserve units to mobilize and execute assigned contingency missions. The goal is to train the Reserve component in peacetime to operate as an integral part of the Total Force in wartime. Readiness is evaluated through the Marine Corps Combat Readiness Evaluation System (MCCRES), Mobilization Operational Readiness Deployment Tests (MORDT's), Inactive Duty Training, and field exercises.

- Marine Corps Combat Readiness Evaluation System. Using the same standards as applied to like active units, MCCRES offers a dynamic vehicle to measure unit readiness through evaluation of actual performance under realistic conditions. In FY-81, 7 of the 13 units tested were fully combat ready. Aviation units scored best, with 86 percent combat ready. Ground units continued to need improvement in

command and control and fire support coordination at the battalion level. This problem is exacerbated by the geographical dispersion of the units. In FY-82 the number of units to be tested will increase 184 percent.

- Mobilization Operational Readiness Deployment Tests. MORDT's provide a measurable indicator of SMCR unit mobilization response through evaluation of those actions essential to the mobilization process. This includes testing the units' administration, logistic readiness, and emergency recall and embarkation procedures. In FY-81 95 units were tested. Of these, over 80 percent were rated substantially ready or better. The goal is to increase the percentage of units tested each year. For FY-82 there will be a 50 percent increase over FY-81.

- Inactive Duty Training. Our objective is to increase mission oriented training conducted in realistic environments away from Reserve training centers. In FY-81 215 units conducted weekend away training. In keeping with the objective, a 35 percent increase is planned for FY-82.

- Field Exercises. Field exercises afford a less structured medium through which readiness can be evaluated. The tempo of exercises seen in FY-80 continued through FY-81. Nearly 15,000 reservists participated in field exercises which were longer than a weekend in duration. Of these, 9 were major combined, joint or service exercises involving some 11,630 Marine reservists. In furtherance of the goal to integrate Reserve units with the active forces, 21 Reserve units were assimilated into regular organizations during 3 exercises. This level of activity will continue in FY-82.

Individual Ready Reserve (IRR)

- Reserve Counterpart Training (RCT). The RCT program allows members of the Individual Ready Reserve to voluntarily participate in a two week program of active duty to enhance and refresh their military skills by training alongside their active duty counterparts. Besides benefiting reservists with "hands on" training, this program provides a source of replacements for temporary personnel shortages in active force commands.

-- Individual Ready Reservists have thus far participated in Rapid Deployment Joint Task Force exercises with the 1st Marine Amphibious Force, III Marine Amphibious Force exercises in Korea, desert firing exercises at the Marine Corps Air Ground Combat Center, and a Joint Chiefs of Staff mobilization exercise. In all, a total of 1,543 Individual Ready Reservists received refresher training through this program in FY-81.

-- In FY-82 aproximately 1,075 officers and 500 enlisted Reserves will participate in the RCT program. This represents a 2 percent increase over 1981. The excellent show rate of participating reservists and the praise of host commanders are strong testimony to the effectiveness of the program.

- Preassigned Individual Ready Reservists. As a result of a recent Congressional decision which permits the Military Services the use of involuntary training for IRR members, the Marine Corps plans to order to active duty for training those IRR members preassigned to critical mobilization billets requiring fill in the first 30 days of mobilization and who possess MOS's requiring refresher training. Involuntary training will be ordered only when it

is possible to ensure that appropriate skill refresher training will take place.

MATERIEL READINESS

A critical element in the ability of the Reserve to execute assigned missions upon mobilization is the materiel readiness of the SMCR units. While the Reserve has improved in other readiness areas over the past year, materiel readiness remains an area of major concern.

Ground Equipment

At the end of FY-81 the shortfall in ground equipment for the 4th Division/Wing team was $546.2 million.

GROUND SHORTAGES

COMMODITY ITEMS	COST (MILLIONS)
COMM/ELECT	$92.6
ENGINEER	$106.2
MOTOR TRANSPORT	$127.8
ORDNANCE	$145.9
GENERAL SUPPLY	73.7
TOTAL	$546.2

Total equipment requirements are determined by aggregating the authorized Tables of Equipment (T/E) for each unit in the 4th Marine Division, 4th Marine Aircraft Wing and the 4th Force Service Support Group. The Reserve T/E's are the same as for like active units.

Of the total equipment authorized, approximately 45 percent is held by the units as a Training Allowance (T/A). The T/A is established as a function of the amount of equipment which can be satisfactorily stored and maintained at the training centers while at the same time fully

satisfying the training needs of the units concerned. Thus, the actual T/A, as a percentage of T/E, will vary by unit. Unit T/A equipment is essentially compatible with that being used by the active forces.

The remainder of the Reserve T/E is programmed to be held in a protected status in the stores system at the Marine Corps Logistics Bases, Albany, Georgia and Barstow, California. Upon mobilization, equipment held in the stores system is to be shipped to the units' Stations of Initial Assignment (SIA).

As a result of funding shortfalls in previous years, the Marine Corps' protected stocks are not adequate to satisfy total Marine Corps equipment requirements. This shortfall was exacerbated by the Enhanced Near Term Prepositioning

FY 82-87 EQUIPMENT SHORTAGES

($ in millions)

	FY-82	FY-83	FY-84	FY-85	FY-86	FY-87
COMM/ELECT	86.2	82.1	77.5	20.9	18.0	5.7
ENGINEER	98.9	93.8	91.5	65.2	28.5	7.7
MOTOR TRANSPORT	127.6	127.1	126.5	115.9	104.3	54.3 1/
ORDNANCE	144.4	139.4	32.4	29.2	27.0	3.9
GENERAL SUPPLY	73.7	73.7	73.2	69.1	67.6	63.7 2/
	530.8	516.1	401.1	300.3	245.4	135.3 3/

1/ New start (FY-82) 900 series trucks ($53.7 million)

2/ New start (FY-82) shelter program ($56.5 million)

3/ Of the $135.3 million shortage that will exist in FY-87, over $110 million is for motor transport items and shelters being purchased for the active forces beginning in FY-82.

Ships (ENTPS) program which caused a 10-12 percent reduction in equipment available for issue to the Reserve.

Increased FY-82 procurement funds have been directed toward reducing these shortages. If the present programmed funding levels remain intact during the period, the shortages will be reduced to $135.3 million by the end of FY-87.

Secondary Items

Significant deficiencies also exist in secondary item support for Reserve forces. Secondary items include consumables (non-depot reparables, repair parts, 782 gear, etc.) and depot reparables (engines, transmissions, final drives, etc.).

FY 81-87 SECONDARY ITEM SHORTAGES

($ in millions)

	FY-81	FY-82	FY-83 -----	FY-87
Consumables	86.5	73.2	46.9	46.9 1/
Depot Reparables	51.5	49.5	49.5	49.5 1/
Total	138.0	122.7	96.4	96.4

1/ Program initiatives are being considered to further reduce this deficiency.

Navy Funded Stocks. Medical, dental and aviation support for the SMCR is provided from the Navy War Reserve Program (NAVWRP). The stockage objective is 60 days of supply. Serious shortages exist due to a low priority of funding. Deficiencies of $36.0 million exist in aviation items, and $6.8 million in medical and dental items.

MODERNIZATION

Commencing in FY-83 we intend to embark on an extensive, phased seven year modernization plan to restructure and

equip the ground, combat service support, and aviation elements in order to provide those capabilities and functions needed to satisfy full wartime requirements.

Ground Combat Forces

The ground forces will be streamlined by reducing infantry strength while increasing firepower and reinforcing elements.

- Commencing in FY-82, the infantry battalion structure will be aligned with that of the active forces and reduced in manpower from 1144 to 897. The structure will be realigned to match actual numbers of reservists at specific locations. This will afford a closer match of structure to personnel on hand, and should increase personnel readiness while accommodating the unequal geographic dispersion of Marine reservists.

- Infantry firepower will be increased with the introduction of the following new weapons systems during FY-82 through FY-87; the MK19 heavy machine gun; the shoulder launched multi-purpose assault weapon (SMAW); the high mobility multi-wheeled vehicle (HMMWV); and the lightweight 60mm mortar. Introduction of the M198 howitzer is anticipated.

- The following organizations, needed to deploy three active MAF's at wartime strength but which cannot be programmed into the active forces, are planned for addition during the mid-1980's (Funding permitting):

-- Force Reconnaissance Company (154 billets)
-- Civil Affairs Group (194 billets)
-- Special Security Communications Team (7 billets)

-- Air Naval Gunfire Liaison Company (343 billets)

-- Sensor Control and Management Platoon (46 billets)

-- TOW Platoons (318 billets)

-- Target Acquisition Battery (179 billets)

- Starting in FY-84 a Reserve Marine Amphibious Brigade (MAB) Headquarters will be structured and manned in order to provide additional contingency flexibility to accommodate a separate MAB deployment or to act as the basis for expansion to a fourth MAF headquarters.

Combat Service Support Forces

During the 1980's, a 56 percent expansion is planned for the 4th Force Service Support Group. This will structure, man and equip the 4th FSSG to optimally reinforce and augment the active FSSG's to satisfy surge requirements, enhance sustainability and provide combat service support to a separate MAB or a Reserve Division/Wing Team if augmentation and reinforcement are not ordered. The expansion will be undertaken in two phases.

- Phase I (FY 81-83). Build the six existing battalions to wartime structure by activating contingency billets and reactivating cadred units to include the Medical and Dental Battalions (1,907 billets)

- Phase II (FY 82-86). Plan to add two Bulk Fuel companies, a Beach and Port Operations company, an MP Company and various platoon size units (1,883 billets). This new structure is required to deploy the active FSSG's at full wartime strength, but cannot be programmed into the active forces.

Medical Support Forces

A major initiative being undertaken in coordination with the Navy is the activation, manning, and equipping of the 4th Medical and Dental Battalions in order to reinforce the active MAFs, provide a surge capability, and support the Reserve MAB. This significant effort will take several years to bring to fruition, entailing close collaboration between the Navy and Marine Reserve to make it work.

- An essential complement is the provision of adequate medical support to the combat and combat support elements of the 4th Division and Wing. To ensure Reserve units are prepared to mobilize with their organic medical personnel, Navy Reserve personnel will be assigned to billets within the 4th Division and Wing and Navy Reserve participation in Marine Reserve unit inactive duty training and annual training will be increased.

Aviation Forces

Currently, the 4th Marine Aircraft Wing is limited in its capability to augment and reinforce the active forces with modern aircraft due to: aging aircraft, shortages, incompatibility between active and Reserve aircraft and block obsolescence.

- Aging aircraft

-- The SMCR aircraft inventory consists of attack aircraft that are 14 to 17 years average age, fighters that average 16 years of age, and transport helicopters that average 14 years of age.

-- Aging aircraft require increased maintenance time. A comparison of the average number of Direct Maintenance Man Hours required per flight hour is shown.

Fleet Wide		4th MAW	
A-4M	23.8	A-4E	42.9
OV-10D	16.6	OV-10A	43.0
KC-130R	14.9	KC-130F	51.6
CH-53D	35.9	CH-53A	41.9
AH-1T	23.5	AH-1J	49.0

- Aircraft Shortage. The age problem is further aggravated by lack of aircraft in certain mission areas.

Type	Shortage
KC-130	7
C-12B	1
AH-1J	17
OV-10A	3
CH-53A	2

- Incompatibility between active and Reserve Aircraft. SMCR F-4 fighter and A-4 attack aircraft will be incompatible with active forces upon introduction of F-18 and AV-8B in the mid-to-late 1980's.

FY 82 - 85	ACTIVE:	F-4S, A-4M
	RESERVE:	F-4N, A-4E/F
FY 85 - 90	ACTIVE:	F-18, AV-8B
	RESERVE:	F-4S, A-4M

- Block Obsolescence of Aircraft. Marine Reserve aviation faces mid-range and long-range problems of block obsolescence with its aircraft:

-- Force levels of F-4S and A-4M aircraft cannot be maintained past 1990 and 1992, due to normal attrition.

-- Service life for the OV-10 expires in 1987.

-- CH-46 and CH-53A service life expires in 1993-95.

Modernization Program. The Marine Corps has developed a long range modernization plan to upgrade the capabilities of the 4th MAW. The achievability of this plan is directly dependent upon the availability of necessary funding and the ability to recruit skilled Reserve full-time support personnel.

- Transport aircraft

The Marine Corps is deficient in KC-130 aerial refueler/intra-theater transport aircraft.

Requirement	Current	Short
10 squadrons	4 squadrons (3 active) (1 Reserve)	6 squadrons

Recognizing this deficiency, Congress directed the Department of the Navy to begin a phased program to complete the squadron at Glenview, Illinois and begin a second squadron. Expedited procurement of KC-130 aircraft for the Reserve was also directed. With the addition of the 4 KC-130's appropriated in FY-82, the shortage in the current squadron will be reduced to three. Funding to build a second squadron could not be accommodated in the FY-83 budget. This leaves a total of 17 KC-130s which must be procured to fill the Congressional mandate.

- Helicopters

-- Attack helicopters. There is a Marine Corps wide critical shortage in AH-1 attack helicopters.

Requirement	Current	Short
15 squadrons	4 squadrons (3 active) (1 Reserve)	11 squadrons

--- The Reserve squadron only possesses 8 of the 24 aircraft authorized. Present plans look toward transferring 16 AH-1J aircraft from the active forces beginning in FY-86 in order to bring the Reserve squadron to its authorized strength. While this improves the numbers, it does not lessen the aging problem.

--- The urgent need is to increase the helicopter anti-armor capability to counter large numbers of mechanized and armored units which will be encountered on a high threat battlefield. Only the AH-1T (TOW) has an anti-tank capability. This is an ideal mission for the Reserve as the manpower, airfield, and support facilities are available and the AH-1T requires 50 percent less maintenance than the AH-1J. The goal is to add one AH-1T squadron (24 aircraft) to the Reserve structure (tentatively planned to be based at Atlanta). Fiscal Year 1985 is the earliest this initiative could be considered due to funding priorities.

-- Transport helicopters. In FY-82 and FY-83, 6 CH-46 and 4 CH-53 aircraft will be transferred from the active forces. This will bring the two CH-46 squadrons to authorized strength and increase the CH-53 authorized strength to 22 aircraft.

- Attack Aircraft

-- The present plan is to replace the A-4E/F with the more capable active force A-4M beginning in 1987. This may be expedited if the active force conversion from A-4 to AV-8B is accelerated. If this occurs, the Reserve attack squadrons may be assigned the "real world" CINC commitments as the active squadrons stand down and convert. The ultimate goal is to replace the A-4 with the AV-8B, in order to achieve compatibility with the active forces. An interim

solution is to activate an AV-8C squadron within the Reserve some time in the FY-88 time frame, pending resolution of the introduction of the AV-8B into the Reserve force.

- Fighter Aircraft

-- The two Marine Corps Reserve F-4N squadrons will begin conversion to the F-4S beginning in 1985, concurrent with the active force conversion to the F-18. In keeping with total force employment, the Reserve squadrons will probably be employed to cover active force contingency commitments during the F-18 transition. With the completion of the conversion of the active force into the F-18, programming will commence to acquire the F-18 for the Reserve force.

MOBILIZATION

A strategy which stresses the importance of improving plans and capabilities to respond to world wide crisis situations, demands an equally responsive mobilization process. Our earlier mobilization planning did not fulfill the goal, so about a year and a half ago, we started working to review, refine and update the mobilization process. Progress has been made, but much more remains to be done.

Management. A first step was to form an inter-staff mobilization committee within the Headquarters to coordinate all aspects of mobilization planning and to oversee testing and evaluation.

Unit mobilization. In response to the refinement of unified command operations plans, the process of selecting specific Reserve units to respond to CINC requirements is underway. This is a change from former procedure which was to identify notional units shortly prior to or on M-day.

- We have determined that the procedures which must be followed to mobilize units require review, testing, validation and modification. Included are warning orders, mobilization orders, transfer of personnel to active status, pay procedures, dependent care, movement of personnel and equipment to assigned Stations of Initial Assignment (SIA's), and the integration of mobilized units into the active structure. Many of the new procedures, which can be adopted unilaterally, will be institutionalized by FY-83.

- A most pressing joint service problem is the refinement of a coordinating mechanism which will permit the services to simultaneously move their Reserve units and associated equipment under conditions of large scale mobilization.

Individual Mobilization. Of equal importance is the assurance that qualified individuals are available to fill vacant billets at the time and place needed. Our approach will be directed toward preassignment, simplifying call-up procedures and streamlining of individual processing.

- Preassignment: Pretrained individual reservists are being selected and preassigned as Mobilization Designees (MobDes) in critical billets which must be filled between M-Day and M+10. These MobDes personnel will be trained in peacetime to insure their availability to fill these billets without post-mobilization training. By the end of FY-83, the Marine Corps will have identified approximately 75 percent of these billets.

- Simplifying Call Up Procedures: Approximately 90 percent of the individual Reserve population will remain unassigned. The assignment of these personnel upon

mobilization will be scenario dependent, but their call-up, when required, must be accomplished in an expeditious manner using mailgrams. To ensure prompt notification, appropriate authorization is needed which will require Western Union and the U.S. Postal Service to handle military mailgrams on a priority basis during mobilization. Regulatory authority is also needed to require commercial carriers to honor travel warrants included in mailgrams. We are working with the Department of Defense on these issues.

- Streamlining Individual Processing: Fifty Mobilization Stations, manned by preassigned mobilization designees, will process individual reservists and retired personnel upon mobilization and prior to their assignment to active duty. Mobilization Processing Centers (MPC's) at each SIA will assign incoming individuals (IRR, Standby, FMCR and retirees) to their new commands and provide the coordination/liaison necessary to facilitate the arrival of SMCR units and their associated equipment.

FACILITIES

There is a pressing need to replace, renovate or upgrade 87 training centers in order to afford an acceptable training and habitability standard for the Reserve. Unless the present rate of replacement is accelerated, some of these centers will be in use well into the next century.

The opportunity to replace inadequate Marine Corps Reserve facilities with newly constructed joint centers is constrained by a chronically underfunded military construction program for the Navy and Marine Corps Reserve. Although the program has shown some growth over

the past several years, the rate of increase has not kept pace with inflation.

The FY-83 Military Construction Naval Reserve (MCNR) program includes nine projects in support of the Marine Corps Reserve, leaving a $196 million backlog. This backlog consists of 15 projects which are programmed, but unfunded, plus an additional 63 training facilities which require construction, replacement, renovation or upgrading, but are unprogrammed.

MANAGEMENT

The readiness and mobilization potential of the Reserve can only be as effective as the management structure which subtends it. Commensurate with the planned expansion of Reserve capabilities is the requirement to initiate management organizations, procedures and systems which will effect maximum efficiency at the most economical level.

Starting in FY-82 we have inaugurated actions which will institute a streamlined management base upon which to build a revitalized Reserve organization.

Individual Reserve Management. Before FY-82 the Marine Corps Reserve had no management structure to receive, administer, train, assign, support the mobilization of, and, eventually, discharge individual reservists. The Marine Corps Reserve Support Center (MCRSC) has been established at Kansas City for this purpose and is expected to achieve full capability by FY-84. With the advent of this organization, we look toward the realization of efficiencies not heretofore possible.

- Better response and more effective administration will be achieved in the maintenance of 82,000 Reserve records

and the expedition of 140,000 monthly transactions. Training manangement of individuals to meet mobilization requirements will be instituted. Individual Ready Reservists will be grouped and managed to ensure identification and availability of proper rank and MOS mix. Critical skill shortages will be reduced. Further expansion of the IMA program will be possible, thus ensuring early fill for critical mobilization billets.

Reserve Manpower Management and Pay. Culminating a 7 year effort, the Marine Corps' Reserve Manpower Management and Pay System (REMMPS) became operational in January of this year. REMMPS provides an automated means of drill attendance accounting, retirement credit reporting, and expeditious payment of individual reservists (reducing payment time from 60 to 14 days).

Automated Data Processing (ADP) Systems

An automated data processing center will be established in FY-82 at the Marine Corps Reserve Support Center. This will fill a serious void in our capability to administer, train, and mobilize reservists. It will also permit us to replace antiquated manual methods of reporting and monitoring data, accessions, training, budgeting and the like.

Beginning in FY-82, automated data processing equipment will be introduced into the SMCR units. Funding has been approved by Congress to purchase 111 devices in FY-82, and funding for 100 additional devices is included in the FY-83 budget. The introduction of this automated data processing equipment will provide our SMCR units with equipment that is compatible with the active forces. It will permit them to

update the present cumbersome and often inaccurate manual input methods.

Drill Attendance Reporting

In response to Congressional concern, as well as the drive to eliminate waste, fraud, and abuse, the Marine Corps Reserve took steps in FY-81 to correct inaccurate Reserve drill attendance reporting. The Defense Audit Service reported that the problem existed at the reporting unit level. As a result, utilization of the field report was deleted as a fiscal management tool and the payroll report adopted as the basis for drill attendance reporting. Inspectors General conducted 294 inspections of unit drill attendance reports. No improprieties were discovered. Drill attendance reports were reviewed against the drill pay checks received for disbursement to individual reservists. As a result, 115 checks, totaling $14,738, were returned in FY-81. These checks were issued as a result of administrative error rather than unwarranted claims.

The replacement of the old field reporting system with the new Reserve Manpower Management and Pay System (REMMPS) in FY-82 will permit an even more accurate, real-time basis for calculating obligations and tracking drill attendance.

THE BUDGET

The fiscal year 1983 Reserve budget request of $214.3 million is a carefully formulated fiscal program to continue improvement in mobilization readiness and to support an SMCR end strength of 39,744 (38,300 average strength). It represents only 2.9 percent of the overall Marine Corps; a decline from 3.0 percent in fiscal year 1982.

Real growth averaged two percent from FY-78 to FY-80 with an increase of 10 percent in FY-81 and 11 percent in FY-82, when the proposed supplemental is included. In FY-83, the budget projects an increase of 6.7 percent in real growth.

For comparison, the FY-82 budget and FY-83 request are displayed by appropriation in the following tables.

MARINE CORPS RESERVE

($ in millions)

APPROPRIATION	FY-82	FY-83
Reserve Personnel, Marine Corps (RPMC)	141.5	165.9
Operation & Maintenance, Marine Corps Reserve (O&MMCR)	40.3	48.4
TOTAL	181.8	214.3

FISCAL YEAR 1982 SUPPLEMENTAL

($ in millions)

RPMC	PROGRAM	TOTAL
PAY RAISE		$12.9
DOPMA (Enl Subsistence)	.8	
TEMPORARY LODGING ENTITLEMENT (TLE)	.1	
PLC	.9	
CONTRACT MEALS	.3	
DRILL ATTENDANCE	.7	$2.8
O&MMCR		
PAY RAISE		$0.1
TOTAL RESERVE		$15.8

RPMC

The $15.7 million RPMC supplemental represents: (1)

$12.9 million for the FY-82 military pay raise; (2) $.9 million to support increased training of officer candidates in the Platoon Leaders Class (PLC); (3) $.7 million to increase the drill attendance percentage from 85 percent to 87 percent (FY-81 actual was 87 percent); (4) $.3 million to support contract messing requirements; and (5) $.9 million to support entitlements in subsistence and temporary lodging mandated by Public Law 96-513.

O&MMCR

A supplemental of $.1 million for O&MMCR is requested to support the 4.8 percent civilian personnel pay raise.

FISCAL YEAR 1983 BUDGET

RPMC

The FY-83 RPMC Appropriation Budget request of $165.9 million will support funding requirements for pay and allowances, subsistence, clothing and travel for unit and individual training and for other training support.

RESERVE PERSONNEL, MARINE CORPS
($ in millions)

UNIT AND INDIVIDUAL TRAINING (Budget Activity 1)	FY 1983
PAY & ALLOWANCES, TRAVEL AND CLOTHING FOR SMCR	$78.723
INDIVIDUAL MOBILIZATION AUGMENTEES	3.200
INITIAL ACTIVE DUTY FOR TRAINING	40.157
TRAINING PRIOR TO RECRUIT TRAINING	.427
SUBTOTAL UNIT AND INDIVIDUAL TRAINING	$122.507

OTHER TRAINING AND SUPPORT (Budget Activity 2)

MOBILIZATION TRAINING OF INDIVIDUAL READY RESERVE (IRR)	$2.411
SCHOOL TRAINING	6.419
SPECIAL TRAINING	7.630
ADMINISTRATION AND SUPPORT	18.780
PLC	6.625
JROTC	1.528
SUBTOTAL OTHER TRAINING AND SUPPORT	$43.393
TOTAL APPROPRIATION	$165.900

- Unit and Individual Training

-- The $78.723 million includes pay and allowances for an average strength of 2,338 officers and 30,037 enlisted within the units of the SMCR. This is an increase of 11 officers and 182 enlisted over FY-82. Funding is also included for replacement of uniform clothing.

-- $3.2 million is targeted for Individual Mobilization Augmentees. The funding supports an average strength of 574 officers and 362 enlisted divided as follows: Pay Group A-436; Pay Group B-100; Pay Group C-300; and Pay Group D-100.

-- The $40.157 million will permit the Marine Corps Reserve to access and process through Initial Active Duty for Training, 9,005 reservists in FY-83. This is an increase of 183 trainees over FY-82.

- Other Training and Support

-- The $2.411 million for Mobilization Training of Individual Ready Reserve provides 1,075 officers and 500 enlisted the opportunity to participate in counterpart and skill refresher training.

-- The $6.419 million for School Training encompasses the formal training required for refresher/ proficiency, career development, acquisition, and unit conversions. School training will be provided to 2,179 officers and 1,552 enlisted, an increase of 9,438 mandays over FY-82.

-- The $7.63 million in Special Training funds exercises, conferences, operational training, management support, service mission support, competitive events, recruitment and retention. A total of 1,730 officers and 1,002 enlisted will participate in FY-83, an increase of 3,828 mandays over FY-82.

-- Administration and Support

--- During FY-83, 124 officers and 504 enlisted full-time support Reserve personnel are planned to be on active duty under title 10 USC, sections 265, 672 (d) and 678. This is an increase of 3 officers and 242 enlisted from FY-82.

--- To achieve the growth discussed, while maintaining quality and reducing skill shortages, $2.712 million has been allocated to enlistment, reenlistment and educational assistance bonuses.

--- As an additional aid in reducing grade and skill degradation, $413 thousand has been earmarked for the SMCR Affiliation Bonus. This is an increase of 658 bonuses over FY-82.

-- In FY-83 we intend to increase the Platoon Leaders Class (PLC) by 630 mandays. This will require $6.625 million for pay, subsistence, travel, and clothing. These personnel attend two periods of summer training and, upon completion of training and graduation from college, are commissioned in the Marine Corps Reserve and assigned to active duty for three years.

-- The $1.528 million for Junior ROTC provides for the initial issue of uniforms for 3,050 new students who will be trained during FY-83.

O&MMCR

The FY-83 O&MMCR Appropriation Budget request of $48.4 million provides the funds for the day-to-day costs of operating and maintaining Marine Corps Reserve forces, functions, activities and facilities.

OPERATION AND MAINTENANCE, MARINE CORPS RESERVE
($ in millions)

BUDGET ACTIVITY	FY 1983
MISSION FORCES	$24.7
DEPOT MAINTENANCE	1.5
OTHER SUPPORT	22.2
TOTAL	$48.4

- Mission Forces. The funding of $24.7 million contained in Mission Forces provides for SMCR unit training, equipment, operation and maintenance costs which support inactive duty, weekend away and annual Active Duty Training. Included are funds for Marine Corps Reserve participation in JCS directed and coordinated exercises, intraservice, and interservice training exercises and field training exercises and command post exercises. To improve SMCR readiness, the following increases are included:

-- $3.0 million finances increased training readiness. The increase encompasses commercial hire of vehicles, transportation costs, fuel, consumable supplies, and repair parts to support the weekend away and ATD training program. Also included are replenishment/ replacement and acquisition of equipment to partially fill

existing deficiencies in both organizational and individual training allowances as well as initial issue of new items of equipment being introduced into the inventory.

-- $.8 million to support an SMCR strength increase of 1,204 personnel and 4th Marine Aircraft Wing modernization.

- Depot Maintenance. The $1.5 million finances fifth echelon Depot Maintenance and rebuild of 83 major end items of Reserve training equipment. Included is an increase of $.1 million to rebuild additional secondary reparable items required to support the tempo of training.

- Other Support. Funding of $22.2 million in Other Support is budgeted for Base Operations and Other Activities.

-- $11.3 million is allocated for Base Operations. This includes funding to maintain and operate our training centers, pay 4th Marine Division-Wing Team civilians, maintain SMCR unit ADP devices, and provide other necessary base services. A small increase of $800 thousand accommodates the introduction of additional SMCR ADP devices and permits some training center upgrade through replacement of obsolete and unserviceable plant property. In addition, the increase includes civilianization of 9 military billets to improve administrative and fiscal continuity and make more efficient use of limited military resources.

-- Other Activities. $ 10.9 million.

--- Over half of the funds included under this category ($5.7 million) are devoted to supporting the level of recruiting effort and advertising necessary to attain the planned non prior service accessions and increase the sorely

93-273 O-82--78

needed prior service input. The total represents a small increase of $745 thousand over FY-82.

--- $4.2 million is allocated to the operation of the Marine Corps Reserve Support Center in its role as the locus of individual management activity. The increase of $400 thousand from FY-82 has been incorporated to ensure full operation by FY-84 and effective execution of the broad supervisory mission.

--- The remaining $1.0 million encompasses such diverse items as postal expenses, headquarters personnel travel and entry fees for competition in arms.

CONCLUSION

Mr. Chairman, as I stated at the outset, the Marine Corps Reserve is alive and well. Each year we see it grow in vigor and potential, assuming an ever widening role as a vital adjunct to the active forces. It would be easy at this point to lie back and rest on our laurels, content with the current rate of progress. We know, and you know, that this is not enough. We may never again have the luxury of a leisurely mobilization. World events move swiftly and the Reserve must be ready to react as quickly.

We are accelerating the cadence; moving to improve readiness, modernizing our forces and facilities and introducing efficent management. The road to fulfillment will not be easy, but I am confident with money, sweat and a little luck the job will be done. I would only ask that you, the Congress, continue to offer understanding and sustenance without which the task would be arduous if not impossible.

Mr. STRATTON. What kind of ground Reserve activities do you carry out? Do the members drill as units?

General CRIST. We have a division and a Force Service Support Group. With regard to the Reserve mission, first, as you know, the Marine Corps has three active Marine Amphibious Forces. They are not fully manned or equipped at their wartime levels. The first thing that must be done is to put these MAF's at full strength.

Reserve units therefore are earmarked to augment and reinforce the three active MAF's and train for this task.

The second thing we have to do is make a Reserve Marine Amphibious Brigade available. There are several scenarios, as you well know, which require MAB commitments but for which there are not enough active forces. We have that mission.

Our final mission, should we not have to augment or reinforce the three MAF's, is to be ready to put together a fourth division and force service support group, should we have to do something like we did in Korea at Wonsan; that is, to have to put together another division on short notice to go in. We train to do that mission as well.

The air side of the house will be completely absorbed at mobilization as I am sure you are aware. The Marine Corps aircraft inventory overall, Active and Reserve, is way below our wartime requirement. We don't have enough. Particularly fighter attack. They are just not in the barn. Therefore the Active Forces are going to take all the Reserve aircraft immediately. The Reserve aircraft are old and they are getting older, but they are combat ready and they are going. Marine Reserve aviation can perform its assigned missions effectively. In fact, over the past 2 years, our combat readiness evaluations have shown our Reserve flying squadrons were judged combat ready using the same criteria by which Active squadrons are evaluated. We do have a modernization program. As the Active Forces transition to the F-18 aircraft, starting in fiscal year 1983 and fiscal year 1984 we will get their new, more capable F-4's. At the same time Reserve squadrons will be tasked to pick up the active contingency commitments when the Active squadrons are off the line. The Reserve aviation units will maintain those commitments until the F-18 transition is completed.

The same will happen in the attack community as the Active squadrons transition to the AV-8B. The Reserves will receive the Active squadron A-4M's and pick up the regular commitments until such time as the Actives can stand backup.

Mr. STRATTON. They will let you fly the AV-8B?

General CRIST. Well, sir, we are only programed to get F-18's. It is planned to bring in an AV-8C squadron as an interim measure pending resolution of the introduction of the AV-8B into the Reserve. It is a tricky aircraft, a demanding aircraft. It is something many of our Reserve pilots have not flown before. We want them if the Marine Corps is going to have AV-8B's. By golly, we are going to have AV-8B's. But we want to ease into that program carefully. The AV-8C squadron will permit us to train a squadron so that we will be able to transition to the AV-8B from the A-4M.

Mr. STRATTON. Can you give us a list of what equipment you need, too?

General CRIST. Indeed I can.

[The following information was received for the record:]

MARINE RESERVE EQUIPMENT REQUIREMENTS

A critical element in the ability of the Reserve to execute assigned missions upon mobilization is the materiel readiness of the SMCR units. While the Reserve has improved in other readiness areas over the past year, materiel readiness remains an area of major concern. At the end of fiscal year 1981 the shortfall in ground equipment for the 4th Division/Wing team was $546.2 million.

Ground shortages

Commodity items:	*Millions*
Comm/Elect	$92.6
Engineer	106.2
Motor transport	127.8
Ordnance	145.9
General supply	73.7
Total	546.2

Significant deficiencies exist in secondary item support for Reserve forces. Secondary items include consumables (non-depot reparables, repair parts, 782 gear, etc.) and depot reparables (engines, transmissions, final drives, etc.).

Fiscal year 1981 secondary item shortages

	Millions
Consumables	$86.5
Depot reparables	51.5
Total	138.0

Serious shortages also exist in the medical, dental and aviation support for the SMCR provided from the Navy war reserve program (NAVWRP). This is due to a low priority of funding. Deficiencies of $36 million exist in aviation items, and $6.8 million in medical and dental items.

Mr. STRATTON. Any questions for General Crist?

Mr. Klein.

Mrs. Holt.

Mrs. HOLT. No questions.

Mr. KLEIN. General, the report that the Secretary of Defense sent over on the readiness of the Reserve Force indicated that the pre-positioning had cut the Marine Corps Reserve equipment pool 10 to 12 percent.

Does that affect your squadron?

General CRIST. Of course it has, Mr. Klein, but it also cut the active side. I took my fair share, which was about 12 percent, and so did the active.

As the Marine Corps procures for the maritime pre-positioning ships, the equipment will be returned.

Mr. KLEIN. Most of your equipment is in the "other procurement" line?

General CRIST. All my equipment is in other procurement, Marine Corps. I have nothing except the O. & M. MCR, which provides for organizational equipment and individual equipment procurement, which I actually control.

Mr. KLEIN. Thank you.

Mr. Stratton. If there are no other questions let me thank you, Mr. Secretary and all the witnesses who have borne with us with great patience. We appreciate your frank comments. We will certainly try to do something to help.

We stand adjourned until the call of the Chair.

[Whereupon, at 3:55 p.m., the subcommittee adjourned, to reconvene at the call of the Chair.]

INDEX

CHRONOLOGICAL LIST OF HEARINGS

	Page
Tuesday, March 2—Air Force programs	1
Wednesday, March 3:	
Navy programs	103
Air Force programs	153
Thursday, March 4—Air Force programs	205
Tuesday, March 9	247
Wednesday, March 10:	
Army AH-64 helicopter program	321
Navy and Marine Corps tactical air warfare programs	361
Thursday, March 11—Air Force tactical air programs	447
Wednesday, March 17—Review of DOD budget request	549
Thursday, March 18:	
Army tracked vehicle program; joint Army Marine Corps LAV program	721
Pershing II missile system	747
Monday, March 22—Army weapons program	831
Wednesday, March 24:	
Tactical and support vehicle program	885
Tactical communications program	985
Thursday, March 25—Reserve components	1057

PRINCIPAL WITNESSES WHO APPEARED IN PERSON OR SUBMITTED WRITTEN STATEMENTS

Adsit, Col. Charles C., Project Manager, Division Air Defense Gun System (DIVAD), U.S. Army Armament Research and Development Command:	
Statement—Divad gun	814
Contractor	814
Performance	815
Cost	814
IFF system	815
Problems	815
Ambrose, Hon. James R., Under Secretary of the Army:	
Statement—AH-64 Apache helicopter program	322
AHIP helicopter	339
Cobra attack helicopter	349
Cost-plus incentive contract	327
Costs out of hand	323
Direct manufacturing hours per aircraft	341
Management teams, new contractor, greater efficiency	357
Plan changes and research and development make costs climb	359
Program cost estimate	323
Should-cost items	345
TADS sighting system	346
Written statement	328
AH-64 program cost estimates	329
Should-cost, manufacturing labor hour comparison	330
Total program comparison	331
Andreson, Col. Ronald K., Project Manager, UH-60A (Black Hawk), U.S. Army Aviation Research and Development Command, St. Louis, Mo.: Briefing—Black Hawk Program (UH-60A)	272
Contract Status	278

Andreson, Col. Ronald K., Project Manager, UH-60A (Black Hawk), U.S. Army Aviation Research and Development Command, St. Louis, Mo.—Continued
Page
Cost initiatives ... 285
Cost stability ... 284
Cost trends ... 317
Hellfire missile demonstration ... 277
Operational highlights ... 277
Performance comparison ... 273
Performance requirements ... 274
Procurement budget ... 283
Troop carrier ... 274
Ball, Maj. Gen. Durad D., Program Manager, Abrams Tank System:
Responses to questions submitted for the record:
ACE ... 713
Comparison with M-60 ... 714
Diesel engine ... 715
Fuel consumption ... 715
Maintenance ... 716
Supplemental request ... 716
Training ... 715
Turbine engine ... 714
Written statement—M-1 tank ... 593
Armor modifications ... 598
Budget:
Changes ... 599
Procurement ... 600
R.D.T. & E. ... 600
Engine program, alternate ... 598
Funding ... 599
Gun, 120-mm ... 598
M-1E1 program ... 598
Objectives ... 593
Powertrain durability ... 597
Production and facilitization ... 593
RAM-D parameters/status ... 596
Supportability ... 597
Testing— ... 595
Berkman, Maj. Gen. William R., Chief, Army Reserve:
Statement—Equipment procurement ... 1186
Equipment posture ... 1186
Mission ... 1186
Written statement ... 1188
Procurement, USAR fiscal year 1981 designated ... 1190
RDF-designated equipment procurement ... 1190
Bernard, Charles W., Director of Land Warfare, Tactical Warfare Programs, Office of the Under Secretary of Defense for Research and Engineering, Department of Defense: Statement ... 886
Procurement of administrative-use vehicles ... 886
Competitive bedding for contracts with NATO countries ... 887, 893
Cost-effective, highly effective program ... 888
Culver-Nunn amendment, 1977 ... 887
Standardization and interoperabilty of U.S. equipment with NATO forces ... 887
Exclusion of competitive bidding ... 888
Two-way street defense spending ... 882
Vehicles, administrative, number of ... 892
Bodycombe, Maj. Gen. Richard, Chief, Air Force Reserve:
Statement—Reserve manpower program ... 1190
Written statement ... 1191
ART program ... 1192
Equipment needs, highest priority ... 1197
Flying units, structure ... 1195
IMA's (individual mobilization augmentees) ... 1193
Manning ... 1193
Mission ... 1191
Mission support units, structure ... 1195
Modernization of airlift equipment ... 1191

Bodycombe, Maj. Gen. Richard, Chief, Air Force Reserve—Continued
Written statement—Continued
Page
Personnel ... 1194
Rescue and recovery program ... 1193
Strategic airlift ... 1192
Tactical airlift ... 1192
Bowden, Brig. Gen. William, USAF, Deputy Director of Logistics, Plans and Programs, Office of the Deputy Chief of Staff for Logistics and Engineering:
Statement—Other Procurement (March 3) ... 179
Anti-intrusion devices ... 202
Budget request ... 187
Electronic and telecommunication ... 189
Vehicle equipment ... 188
Command and control ... 190
Cheyenne Mountain Complex ... 192, 196, 202
Satellite communications ... 192
Defense support program ... 194
Firefighting equipment ... 181
Foreign produced ... 182
Logistics and training ... 193
Radar bomb scorer ... 193
Spares ... 193
Satellite control facility ... 198
Space systems ... 193
Space Shuttle ... 193
Test ranges ... 193
Space tracking equipment ... 197
Strategic communication ... 191
DEW line ... 191, 195
Pave Paw ... 191, 195
Seek Igloo ... 191, 195
Written statement ... 180
Other Procurement ... 180
Strategic communication procurement ... 180
Statement—Other Procurement (March 24) ... 954
Budget history ... 956
Fleet:
Composition—Quantities by category ... 957
Structure ... 955
Funding impact ... 964
Other Procurement ... 954
Procurement activities ... 963
Requirements generation ... 964
Specification to favor Oshkosh ... 960
Vehicle fleet, status ... 956
Written statement ... 966
Munitions and associated equipment ... 970
Aerial—tow targets ... 973
Bombs ... 973
Cartridges ... 971
Fuzes ... 978
Other items ... 977
Other weapons ... 980
Rockets and launchers ... 971
Vehicular equipment ... 966
Bunyard, Brig. Gen. Jerry M., USA, Program Manager, Patriot Missile System, Redstone Arsenal, Ala.:
Statement—Patriot Missile System ... 804
Chaparral ... 806
Cost ... 804
Improved Hawk ... 806
Maintenance concept ... 806
Missiles, number of ... 804
Roland, replacement for ... 805
Test program ... 807
Use of ... 805
Vulcan ... 806
Written statement ... 807

Bunyard, Brig. Gen. Jerry M., USA, Program Manager, Patriot Missile System, Redstone Arsenal, Ala.—Continued
Written statement—Continued
Page
Acquisition cost track ... 804
Diagnostic software improvement ... 811
Fielding ... 812
International interests ... 812
Production, initial ... 812
Production program ... 808
Financial summary ... 808
R.D.T. & E. program ... 808
Test program ... 810
Burke, Lt. Gen. Kelly H., USAF, Deputy Chief of Staff, Research, Development, and Acquisition, Department of the Air Force:
Statement—Bomber leg of Triad (March 2) ... 4
Air-launched cruise missiles ... 22
ATB (Advanced Technology Bomber) ... 21, 36
Status ... 21
B-1B ... 17, 29, 33, 35
Budget request ... 21
Operational enhancement ... 19
Production, increase in ... 35
B-52 ... 15, 28, 32
Modifications ... 15, 28
Budget priorities ... 6
Investment balance ... 10
Request ... 7
Bombers, today's ... 12
FB-111 ... 31
Force modernization ... 14
KC-10 ... 27
KC-135 reengining ... 25
Budget request ... 29
President's strategic program ... 11, 14
Overview ... 11
Readiness and sustainability ... 13
Statement—Intercontinental ballistic missile leg of Triad (March 2) ... 43
Ballistic missile defense (BMD) ... 43, 52
Deep basing ... 51
Deployment, strategic missile force ... 39
Minuteman ... 40, 47
MX ... 41
Near-term plan ... 44
ABRV ... 44
Continuous patrol aircraft (CPA) ... 50
Costs ... 48
Development ... 44
Ground-launched cruise missiles ... 55
Budget request ... 50
MX long-term options ... 50, 53
Schedule ... 49, 53
Silo basing ... 45
Overview ... 44
President's strategic program ... 42
Titan II ... 39
Written statement ... 57
I. Introduction ... 57
II. Strategic ... 58
Strategic offense ... 59
Land-Based ICBM's ... 59
Bomber Leg ... 61
Strategic defense ... 64
Atmosphere warning and defense ... 64
Missile surveillance and warning ... 65
Space surveillance and defense ... 65
Other strategic defense ... 66
III. General purpose ... 66
Air-to-surface attack ... 66

Burke, Lt. Gen. Kelly H., USAF, Deputy Chief of Staff, Research, Development, and Acquisition, Department of the Air Force—Continued
Written statement—Continued
Page
Counterair ... 68
Electronic combat ... 70
Reconnaissance ... 71
Mobility ... 72
Other general purpose ... 74
IV. Space ... 74
V. Command, control, and communications ... 76
Strategic C³ ... 77
Tactical C³ ... 78
Defensewide C³ ... 79
VI. Management, support, and defensewide systems ... 80
Management ... 80
Support ... 80
Defensewide system ... 80
VII. Readiness—Sustainability ... 81
Missile and aircraft spares and repair parts ... 82
War consumables ... 82
Aircraft common ground equipment ... 82
Simulators ... 83
VIII. Technology Base ... 83
Major technology base programs ... 83
Materials ... 84
Propulsion ... 84
Flight vehicles ... 84
Electronics ... 85
Weaponry ... 85
Environment ... 85
People ... 86
The technology base challenge ... 86
IX. Air Force management ... 87
Technology planning ... 87
NATO initiatives ... 87
Acquisition management ... 88
Acquisition policy ... 88
Contracting actions ... 89
Program management ... 90
X. Conclusion ... 91
XI. Tables ... 91
Aircraft procurement estimates ... 92
R.D.T. & E. budget estimates ... 93
XII. Glossary ... 100
Statement—Airlift forces (March 4) ... 206
Airlift availability ... 221
Airlift forces ... 206
C-5 ... 212, 214, 221, 224, 227, 244
C-17 ... 222, 227, 233, 244
C-130 ... 233, 236
Ski model for ANG ... 238
C-141 ... 233, 236
CRAF ... 217, 224, 228, 235, 239, 243
Cargo ... 215
Passenger ... 215
DC-8, proposals to reengine ... 230
European distribution system ... 230
Budget request ... 231
Intertheater master plan ... 209, 215, 225, 240
KC-10 ... 218, 220, 225, 229
Supplemental cost breakdown ... 229
Legislation, Air Force submitted (H.R. 5327) ... 234
Mobility studies ... 208
Objectives ... 209
Recommendations ... 227
Shortfalls, alternatives for reducing ... 215, 246
Spares funding ... 211, 241
Wing modification, C-5A ... 212

Burke, Lt. Gen. Kelly H., USAF, Deputy Chief of Staff, Research, Development, and Acquisition, Department of the Air Force—Continued
Statement—Airlift forces (March 4)—Continued
Wing modification, C-5A—Continued
Budget request ... Page 214
Statement—Primary aircraft authorization (PAA) March 11 ... 449,475
A-10, need for additional ground support equipment ... 545
F-15:
Air-to-ground capability ... 544
Diversion of, to strategic air defense mission ... 546
F-15E/F-16E ... 477, 546
F-106 Air National Guard replacement ... 548
F-111—Modernization ... 545
KC-10:
Aerial tanker demand ... 536
Congressional Budget Office study ... 536
Funding profile ... 538
Tanker capability/modernization ... 537
Tanker force cost-effectiveness ... 537
KC-135S not suitable for purpose ... 535
Laser Maverick ... 504
Maverick missile, operational problems ... 503
RF-4C replacement ... 547
Carson, Brig. Gen. W. G., Jr., Director of Materiel Division, Installations and Logistics Department, U.S. Marine Corps:
Statement—Tactical and support vehicles ... 935, 940
Five-ton retrofit program ... 940
HMMWV, ¾-ton high mobility multipurpose wheeled vehicle ... 936, 939
LVS, logistics vehicle system ... 938
M939, 5-ton vehicles ... 937
Written statement—Procurement overview ... 941
Ammunition ... 944
Communications and electronics equipment ... 948
Current force structure/pre-positioning programs ... 943
Engineer and other equipment ... 952
Guided missiles and equipment ... 946
Support vehicles ... 951
Weapons and tracked combat vehicles ... 945
Coleman, Capt. Curtis R., II, USNR., president, Naval Reserve Association:
Statement ... 1098
Proposals ... 1100
Recommenations ... 1100
Written statement ... 1102
Aircraft procurement plan, Navy ... 1119
Antisubmarine warfare mission ... 1126
Leasing of aircraft ... 1126
Navy airlift modernization ... 1108
Proposals ... 1103
Conaway, Maj. Gen. J. B., Director, Air National Guard:
Statement ... 1170
Equipment being received from the Air Force ... 1174
KC-135, reengining of ... 1171
Puerto Rican Army National Guard ... 1176
Rapid Deployment Joint Task Force ... 1172
Readiness ... 1171
Rescue mission ... 1171, 1173
Shortages, equipment ... 1170
Training ... 1171
Written statement ... 1177
Manpower ... 1180
Overview ... 1177
Posture ... 1178
Training, realistic ... 1179
Crist, Maj. Gen. George B., Deputy Chief of Staff for Reserve Affairs, Headquarters, USMC:
Statement ... 1197
Activities ... 1237
Equipment requirements ... 1235

Crist, Maj. Gen. George B., Deputy Chief of Staff for Reserve Affairs, Headquarters, USMC—Continued
Statement—Continued
Page
Modernization 1237
Readiness 1197
Written statement 1199
Budget 1229
Facilities 1226
Individual Mobilization Augmentees 1209
Individual Ready Reserve 1210
Materiel readiness 1215
Mission 1202
Mobilization 1224
Modernization 1217
Aviation forces 1220
Combat service support forces 1219
Ground combat forces 1218
Medical support forces 1220
O. & M.M.C.R 1231
Organization:
Individual Ready Reserve 1201
Selected Marine Reserve 1200
Personnel readiness 1203
Unit strength 1204
Training readiness 1212
Donahue, Maj. Gen. Robert J., U.S. Army, Director, Joint Tactical Communications, Department of Defense:
Statement—TRI-TAC program overview 1021
Acquisition program planning 1048
Equipment developments by service/agency 1023
Military communications environment 1022
Objectives 1021
Outlook 1048
Procurement funding 1027, 1047
Programs in development or awaiting development 1046
Status of programs 1025
TRI-TAC system 1024
Written statement 1049
Fiorentino, Col. William J., Project Manager, Pershing II Missile System, U.S. Army Missile Command:
Statement—Engineering development program 764
Cost control 768, 771
Cost increase elements 769, 772
Inflation 770
Production 771
Requirements 771
Schedule 765
Overrun problem 766
Production difficulties 765
Status 764, 766, 769, 776
Test program 772
Written statement 773
Cost increase elements 775
Cost control 775
Development program 774
Highlights of past 12 months 775
Procurement cost 775
Production program 774
Test status 775
Glasgow, Maj. Gen. Harold B., USMC, Deputy for Development, Director, Development Center:
Statement—Marine Corps Light Armored Vehicle (LAV) program 728
AV-98 728
Marine Corps and Army difference of opinion on vehicle 732
Mission 744
Written statement 725
Battalion organization 727
Capabilities 726

Page

Glasgow, Maj. Gen. Harold B., USMC, Deputy for Development, Director, Development Center—Continued
Written statement—Continued
LAV requirements ... 726
Mission variants ... 726
Procurement profile ... 728
Program ... 727
Greenlief, Maj. Gen. Francis S., NGUS (ret.) executive vice president, National Guard Association of the United States:
Statement ... 1059
Air defense ... 1061
Air defense weapons ... 1060
Air National Guard ... 1060
Attack helicopters ... 1059
Chaparral ... 1094
Cobra TOW (AH-1S) ... 1060
Communications ... 1094
Divad gun ... 1094
Forward looking infrared radar (FLIR) ... 1061
KC-135 reengining ... 1061
M-42 Duster ... 1096
Pivads ... 1095
Tactical airlift ... 1061
Tactical fighters ... 1060
Trucks and trailers ... 1059
Vulcan ... 1096
Written statement ... 1063
Air defense weapons ... 1066
Air National Guard:
Air defense ... 1067
Communications ... 1068
Forward looking infrared radar (FLIR) ... 1070
KC-135 reengining ... 1068
Shortages ... 1071
Tactical fighters ... 1068
Annual report on National Guard and Reserve component equipment ... 1064
ARNG ... 1065
Attack helicopters ... 1065
Recommendations ... 1070
Shortages ... 1071
Hatchett, Col. Monte J., Program Manager, MLRS (multiple rocket launch system), U.S. Army Missile Command: Statement—Army's multiple rocket launch system ... 863
Acquisition strategy ... 872
Baseline program ... 865
Design to production cost ... 868
German AT-2 mine warhead ... 868, 876
Maturation phase test program schedule ... 867
Multiyear decision criteria ... 874
SAR track ... 870
System acquisition concept basic program ... 866
Systems hardware ... 864
White Sands Missile Range ... 863
Holt, Hon. Marjorie S., a Representative from Maryland ... 785
Hostettler, Rear Adm. Stephen J., USN, Director, Surface Combatant Systems, Office of the Chief of Naval Operations:
Biographical sketch ... 103
Statement—Navy's strategic and long-range cruise missile requirements (March 3) ... 104
Ballistic missiles:
Astronautics ... 106
Industrial facilities ... 106
Poseidon ... 105
Modifications ... 106
Spares ... 106
Tomahawk ... 107, 120, 126
Budget request ... 107

Page

Hostettler, Rear Adm. Stephen J., USN, Director, Surface Combatant Systems, Office of the Chief of Naval Operations—Continued
Statement—Navy's strategic and long-range cruise missile requirements (March 3)—Continued
Ballistic missiles—Continued
Tomahawk—Continued
Cost 129
Range 134
Trident 105, 136
Budget request 106
Inventory objective 127
Unit cost 123
Cost track—Nunn amendment report 121
Updated Nunn amendment status 121
Missile funding 119
Tomahawk 126
Trident I 119
Over-the-horizon targeting 134
Support equipment and facilities 136
Trident submarine 130
Unit cost increase for total program 125
Written statement 108
Budget activity I 109
Ballistic missiles 109
Modifications 109
Poseidon 109
Support equipment and facilities 110
Trident 109
Budget activity II 110
Missiles, other 110
Tomahawk 110
Missile requirements 109
Mission 108
Objectives 108
Written statement—Other Procurement (March 10) 437
Air-launched ordnance 438
Aircraft support equipment 439
Aviation communications and electronics 437
F-14 440
F/A-18 440
Sonobuoys 438
Spares and repair parts 439
Irby, Col. DeWitt T., Jr., Project Manager, CH-47 (Chonook), U.S. Army Aviation Research and Development Command, St. Louis, Mo.: Written statement—CH-47 modernization program 300
Blivets 304
Capabilities 304
CH-47D 303
"D" modernization, why the 302
Life cycle, 20-year 302
Lift capabilities 305
Materiel fielding 313
Medium lift helicopter 300
Multiyear procurement 314
Performance specification status 312
Procurement, fiscal years 1981 and 1982 ..... 313, 314
Production status 313
System description—improved systems 303
Testing 308
Jones, Rear Adm. J. P., Vice Commander, Naval Facilities Engineering Command, Department of the Navy:
Statement—Civil engineering support and supply support equipment budget request 926
Commercial material, nontactical 926
Jeep, replacement for 928
Written statement 931
Annual allowance and requirements review 932

Page

Jones, Rear Adm. J. P., Vice Commander, Naval Facilities Engineering Command, Department of the Navy—Continued
Written statement—Continued
Other Procurement, Navy—Budget activity:
Civil engineering equipment ... 932
Construction equipment ... 933
Materials handling ... 934
Passenger-carrying vehicles, trucks and trailers ... 933
Supply support equipment ... 932
Procurement plans ... 935
Latham, Donald C., Deputy Under Secretary for Communications, Command, Control, and Intelligence, Department of Defense:
Statement—Command, control and communications (C^3): Overview ... 986
Budget request ... 999
C^3:
General principles ... 986
Implications, theater and tactical systems ... 991
Mission area structure ... 995
Resources:
Appropriation ... 996
Mission area ... 997
Command and control system, characteristics of a survivable and flexible ... 992
Defense guidance ... 993
DOD tactical communications program ... 993
Evolving battlefield ... 987
Funding, theater and tactical ... 998
Have Quick objectives ... 1004
Joint Tactical Information Distribution System (JTDIS):
Army combat support communications program ... 1010
C^3 support for the RDJTF ... 1008
Global positioning system (GPS) ... 1053
Initiatives ... 1005
Joint crisis management capability (JCMC) ... 1009
Acquisition ... 1010
Objectives ... 1009
Milestones ... 1005
National Guard and Reserves, communication equipment ... 1050
Position location reporting system (PLRS) and JTIDS hybrid system ... 1006
Program acquisition ... 1005
Seek Talk ... 1054
Tactical communications program acquisition ... 1010
Air Force ... 1010
Marine Corps ... 1011
Navy fleet ... 1011
National defense, long-term trends in ... 986
Navy C^3I ... 990
Offensive tactical C^3I ... 989
Single channel ground and airborne radio system (SINCGARS) ... 1000
Tactical communications interface ... 988
Technological change, impact of ... 987
Theater/tactical C^3I, problems ... 992
Written statement—Communications program in DOD ... 1013
C^3 system ... 1013
Joint service tactical communications programs ... 1014
Joint tactical information distribution system (JTIDS) ... 1017
Position location report system (PLRS JTIDS) hybrid ... 1017
Tactical communications security (COMSEC) equipment ... 1018
Tactical radio programs ... 1015
TRI-TAC ... 1014
Service tactical communications programs ... 1018
McDonald, Vice Adm. Wesley L., USN, Deputy Chief of Naval Operations (Air Warfare):
Statement—Composition of naval aviation ... 363
A-6A (Intruder) ... 405, 433
Aviation safety ... 365

McDonald, Vice Adm. Wesley L., USN, Deputy Chief of Naval Operations (Air Warfare)—Continued
Statement—Composition of naval aviation—Continued Page
Aircraft procurement, fiscal year 1983 366
AV-8B (Harrier) 411, 444, 446
Aviation force requirement 364
Carrier air wing composition 365
Commonality between Marine Corps and Navy aircraft 364
EA-6B (Prowler) 408, 443
F-14A (Tomcat) 418, 440, 444, 446
F/A 18 (Hornet) 422, 440
KC-130 445
P-3C (Orion) 445
Procurement 440
Written statement—Navy and Marine Corps aviation 368
Aircraft modifications 395
Aircraft procurement 376
A-6 (Intruder) 376
AH-1T (Sea Cobra) 386
AV-8B (Harrier) 379
C-2 (COD) 392
C-9B (Skytrain II) 391
CH-53E (Super Stallion) 385
E-2C (Hawkeye) 389
EA-6B (Prowler) 372
EC-130Q (Tacamo-Hercules/ECX) 394
FA-14A (Tomcat) 381
Phoenix missile 382
F/A-18 (Hornet) 383
P-3C (Orion) 387
SH-2F LAMPS MK I 391
SH-60B (Seahawk) 387
T-34C (Mentor) 393
TH-57 (Sea Ranger) 394
Costs 372
Force composition 370
Force effectiveness 369
Force levels 374
Support equipment and facilities 398
McVey, Col. Peter M., Chief, European Materiel Fielding Team, Abrams Tank System: Written statement—Fielding the Abrams Tank (M-1) 601
Maintenance 603
Schedule, tank company 602
Training, MOS 602
Troop acceptance 603
Maloney, Maj. Gen. James P., Director, Weapons Systems Office, Office of the Deputy Chief of Staff for Research, Development and Acquisition, U.S. Army:
Statement—Soviet threat to the tank fleet (March 17) 551
ACE 568
Fuel consumption 569, 573
Fuel consumption report 570
M-1 tank:
Alternative to 571
Ammunition 556, 559
Armor protection level 552, 556, 558
Auxiliary power unit (APU) 555
Budget request 562
Criticisms 573
Maintenance 582
Power train durability 584, 586, 588
Quality of 554, 566
Survivability 572
Superior to Soviet T-64 and T-72 tanks 552
Thermal imaging system 574
Track combat vehicle program 561
Track life 586
Cost 589

Maloney, Maj. Gen. James P., Director, Weapons Systems Office, Office of the Deputy Chief of Staff for Research, Development and Acquisition, U.S. Army—Continued
Statement—Soviet threat to the tank fleet (March 17)—Continued
M-1 tank—Continued
Page
Transmission 575
Turbine engine, efficiency of 555
Procurement objective 562
Tank fleet 563
Cost 564
Turbine engine 564
Cost 565
Written statement—M-1 tank program 590
Budget request 591
Cost 592
Gun, 120-mm 591
Inventory 591
Survivability 591
Testing 591
Power train 591
Troop acceptance 591
Statement—Pershing II budget request (March 18) 762
Battery set procurement objective 763
Budget request 762
Procurement objective 763
Statement—Army's long-range air defense plan (March 18) 800
Air defense program plan 801
Divad 802, 813, 816
Family of systems 807
Improved Hawk 806
Patriot 803, 805
Roland 805
Soviet improvements 801
Stinger 802, 817
Tactical missiles 801
Vulcan 802, 806, 816
Written statement 785
ATM 797
Budget request 798
Chaparral 791
Costs 785
Divad gun 786, 790
Gun systems 788
Vulcan 788
Hawk 793
Hercules 794
I-Hawk 793
Overview 785
Patriot 794
Post 787
Redeye 786
Roland 791
SAM's 786
Soviet threat, needs to defend against 786
Stinger 786
Threat, the 785
Air threat 786
Close air support 785
Electronic countermeasures 785
Helicopters 786
TSQ-13 798
Weapon capabilities 789
Statement—M-2/M-3 Bradley fighting vehicle (March 22) 832
AIFV 847
Budget request 832
Cost growth 884
FAASV (field artillery and ammunition support vehicle) 877, 882
Industrial base 879, 883

Maloney, Maj. Gen. James P., Director, Weapons Systems Office, Office of the Deputy Chief of Staff for Research, Development and Acquisition, U.S. Army—Continued
Statement—M-2/M-3 Bradley fighting vehicle (March 22)—Continued Page
Fielding ... 881
Larkin study ... 858
M-2 (infantry fighting vehicle) ... 832
M-3 (cavalry fighting vehicle) ... 833
MLRS (multiple launch rocket system) ... 859, 881
Procurement objectives ... 861
Procurement objectives ... 833, 881
Second-source savings ... 883
Testing ... 881
Menetrey, Brig. Gen. Louis C., Director of Requirements, Office of the Deputy Chief of Staff for Operations and Plans: Statement—Distribution of equipment ... 1161
Merryman, Lt. Gen. James H., Deputy Chief of Staff, Research, Development and Acquisition, Department of the Army:
Statement—Army aviation program ... 248
Copperhead rounds guided by AHIP laser ... 296, 316
Divad guns ... 1259
Laser designated capabilities ... 295, 316
Scout helicopter also an attack ... 294
Soviet Hind helicopter ... 249
Stinger ... 260
Written statement ... 249
Army aviation fighting capability ... 249
Multiyear contracting, expand authority for ... 250
Soviet helicopters ... 250
Hind ... 250
Hip ... 250
Soviets outspend United States in military equipment ... 250
U.S. helicopters ... 249
AH-64 Apache ... 249
UH-60 Chinook ... 249
Molinelli, Brig. Gen. Robert F., USA, Deputy Under Secretary of Defense, Tactical Warfare Programs, Department of Defense: Statement—Light Armored Vehicle (LAV) program ... 722
Airlift ... 722
Army and Marine Corps differences of opinion on vehicle ... 731
History ... 722
LASC (light armored squad carrier) ... 729
Marine Corps program ... 723
Vehicles produced for ... 724
MPGS program ... 730
Pre-positioning ... 722
Vehicles to be used ... 724
Nagler, Vice Adm. Gordon R., USN, Director, Command and Control, Office of the Chief of Naval Operations:
Biographical sketch ... 137
Statement ... 138, 152
Command, control and communications ... 152
ECX aircraft ... 146
EHF/UHF ... 152
ELF (extremely low frequency) ... 149
FLTSATCOM ... 153
Satellites ... 138
Extremely high frequency (EHF) ... 138
Fleet satellite communications ... 138
LEASAT ... 138
Minimum essential emerging communications network (MEECN) ... 138, 143
NAVSTAR GPS ... 138, 143, 152
Tacamo aircraft ... 139, 144
Worldwide military command and control (WWMCCS) ... 139
Submarines, detection of ... 145
Written statement ... 139
DMSP ... 142

Nagler, Vice Adm. Gordon R., USN, Director, Command and Control, Office of the Chief of Naval Operations—Continued
Written statement—Continued
Page
ECX 141
MEECN 141
NAVSTAR/GPS 140
Satellite communications 139
Tacamo 141
WWMCCS 142
Palmer, Rear Adm. Frederick F., Chief of Naval Reserve:
Statement:
Aircraft procurement 1147
Reserve capability 1183
Shortages, equipment 1185
Surface force 1147
Written statement 1148
Request:
Appropriations 1151
Commissioned units, major 1151
Force levels 1150
Initiatives:
Readiness improvements 1150
Training 1150
Operation and maintenance 1152
Personnel, Navy Reserve 1151
Status, current 1148
Frigate program and operational control 1148
Readiness, improvement in 1148
Selected Reserve strength 1148, 1149
Support, mutual 1149
Training, improvements in 1149
Parker, Brig. Gen. Ellis D., Deputy Director of Requirements, Army Aviation Officer, Office of the Deputy Chief of Staff for Operations and Plans, Department of the Army: Statement—Army aviation, its importance and its contribution 251
Advanced Attack Helicopter (AAH), Army need for 263
Aircraft functions 257
Antihelicopter capability 259
Army helicopters:
AH-1S (Cobra) 258
AH-64 (Apache) 256, 262
CH-47 (Chinook) 252
OH-6A 264
OH-58 264
UH-1 267
UH-60 (Black Hawk) 269
Attack helicopter posture 261
Close combat helicopters 257
Electronic mission aircraft 265
Hellfire missiles 262
Medium lift helicopter posture 270
Mission requirements 253
OV-1 (Mohawk) 265
Quick Fix—Black Hawk configured as 266
Scout and light observation helicopter posture 264
Soviet helicopters 254
Hind 254
HIP-E 255
Tactical aircraft inventory and location 253
Threat update 254
Philbin, Dr. Edward, Deputy Assistant Secretary for Reserve Affairs, Department of Defense:
Statement 1144
Contingency planning 1158
Distribution of equipment, how determined 1155
Equipment 1144
Modernization 1144
Personnel 1144

Philbin, Dr. Edward, Deputy Assistant Secretary for Reserve Affairs, Department of Defense—Continued
Statement—Continued Page
Posture 1144
Written statement 1145
Equipment 1145
Shortages 1145
Personnel 1145
Training 1145
Pihl, Brig. Gen. Donald, USA, Deputy Director of Weapons Systems, Office, Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army: Statement—Army's LAV program 735
Force structure 735
Gun:
25-millimeter 741
75-millimeter 742
HMMWV TOW 743
HTLD (high technology light division) 736
LASC (light armored squad carrier) 737
MPG (mobile protected gun) 737, 741
Objective, Army high technology test bed program 735
Procurement program 739
Prather, Brig. Gen. Gerald L., USAF, Director, Command, Control and Telecommunications, Office of the Deputy Chief of Staff for Plans and Operations: Statement 172
E-4 (advanced airborne command post) 172
EC-135 173
Prindle, Rear Adm. Charles O., USN, Deputy Director, Research, Development, Test and Evaluation, Office of the Chief of Naval Operations:
Statement 111
Contractors 117
Deterrent force capabilities 118
SLBM modernization baseline program 116
Trident missile (D-5) 113
Warhead, type 117
Written statement 111
Budget request 111
Activities 111
Standard missile 2(N) 112
Tomahawk 112
Trident II 112, 136
Rambo, Col. James E., USA, Project Manager, Stinger Missile System, U.S. Army Development and Readiness Command:
Statement 819
Written statement—Status of the Stinger and Stinger-Post program 819
Accomplishments 823
Deployment status 822
Development schedule 823
Field tests 821
Flight program 824
Fly-to-buy 821
Ground testing, production surveillance 821
IOC (initial operational capability) 820
Management team 820
Manpads evolution 820
Overview 819
Post 820, 822
Production transition 825
Stinger costs 822
Tasks remaining 825
Randolph, Brig. Gen. Bernard P., USAF, Director of Space Systems and Command, Control and Communications, Office of the Deputy Chief of Staff for Research, Development and Acquisition:
Statement—Aircraft and missile procurement 153
Air Force satellite communications system 175
Budget request 175
Carlucci initiatives 185
Defense meteorological satellite program 167

Randolph, Brig. Gen. Bernard P., USAF, Director of Space Systems and Command, Control and Communications, Office of the Deputy Chief of Staff for Research, Development and Acquisition—Continued
Statement—Aircraft and missile procurement—Continued
Page
Defense meteorological satellite program—Continued
Budget request 168
Defense satellite communications system 169, 175, 184
Budget request 169
Defense support program 168, 183
Budget request 168
E-4 (advanced airborne command post) 171
Budget request 171
FLTSATCOM 157
Launch capability 160
Milstar program 158, 176, 184
Budget request 176
Minimum essential emergency communication network (MEECN) 170
Budget request 170
Navstar GPS 161, 184
Budget request 162
Objective 155
Satellite data system spacecraft 157
Space order of battle 156
Space boosters 166
Budget request 166
Space launch support program 165
Budget request 165
Space programs 165
Budget request 165
Space Shuttle 159, 202
Budget request 163
Soviets in space 154, 158
Survivability 157
Titan II missile 176
Written statement 177
I. Space 177
II. Command, control and communications 178
III. Other strategic defenses 179
Roberts, Maj. Gen. J. Milnor, AUS (ret.), executive director, Reserve Officers Association of the United States:
Statement 1127
Air Force Reserve posture 1130
Equipment posture (Army National Guard) 1127
Marine Corps shortages 1130
Naval Reserve:
Aircraft program 1130
Requirements 1129
Procurement priorities (Army Reserve) 1128
Written statement 1132
Air Force Reserve 1140
Army Reserve 1132
Equipment status 1133
Marine Corps Reserve 1138
Naval Reserve 1134
Rundgren, Col. Ivar W., Jr., Project Manager, Army Helicopter Improvement Program, U.S. Army Aviation Research and Development Command; Briefing—Army Helicopter Improvement Program (AHIP) 285
AHIP version 288
Air vehicle performance, primary mission 290
Aircraft performance 290
Commonality by weight 291
Congressional language 286, 300
Cost and price control management 298
Decisions 285
Development approach 287
Laser guided Copperhead rounds from aircraft 296
OH-58A, significant changes from 289
Program direction 286

Rundgren, Col. Ivar W., Jr., Project Manager, Army Helicopter Improvement Program, U.S. Army Aviation Research and Development Command; Briefing—Army Helicopter Improvement Program (AHIP)—Continued Page
Program dollars 297
Program schedule 292
Survivability characteristics 291
Testing 293
Russ, Maj. Gen. Robert D., USAF, Director of Operational Requirements, Office of the Deputy Chief of Staff for Research, Development and Acquisition: Statement—Strategic Air Defense Forces 449
Advanced medium range air-to-air missile (AMRAAM), 457, 496
Combat, conditions of 459
F-15E/F-16E 463
Fighter/Attack:
Forces, 451, 462, 464
Pilots average flying hours 454
Flying hour funding 453
Force:
Objective 452
Structure 461
Future forces 465
Advanced tactical fighter (ATF), 465, 474
Lantirn 457
Munition funding 455
Procurement programs:
A-10, 469, 474
Aerial targets 541
AIM-7 (Sparrow) 494
AIM-9 (Sidewinder) 492
AMRAAM, 457, 496
Compass Call 526
Durandal 514
E-3A (Sentry) 488
ECM pods 530
EF-111A 524
F-5 539
F-15, 476, 482
F-16, 478, 481
Fighter/attack aircraft 460
Gator 520
Guided glide weapon (GBU15) 509
Gun pod, 30-mm 512
HARM (high speed antiradiation missile) 532
KC-10A 534
Lantirn pod 523
Low-level lasser guided bomb (LLLGB) 507
Maverick (air-to-surface missile) 501
Infrared 502
Laser 501
TV 501
MC-130 (Combat Talon) 543
MRASM (medium-range air-to-air missile) 516
PLSS (precision location strike system) 528
Rapier (air-to-surface missile) 498
WASP (wide area antiarmor munitions) 517
Readiness and sustainability 445
Reserve Forces 467
Modernization 468
Readiness 467
Spare parts funding 456
Strategic Air Defense Forces 449
Tactical fighter wing 460
Tactical forces, other 466

Skibbie, Maj. Gen. Lawrence F., Jr., Director of Combat Support Systems, Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army:
Page
Statement ... 902
Commercial utility and cargo vehicle (CUCV), ... 912, 916, 930
High mobility multipurpose wheeled vehicle (HMMWV) ... 912, 914, 929, 939
Other Procurement ... 904
Overage vehicles ... 910
Overview ... 906
Shortages ... 932
Small unit support vehicles (SUSV) ... 983
Vehicles, three categories:
Construction equipment, ... 905, 916
Materials handling equipment, ... 905, 916
Tactical and support vehicles ... 905
Written statement—Army's tactical and support vehicle, other support equipment and ammunition programs ... 918
Ammunition hardware request ... 921
Activity 2: Ammunition production base support ... 925
Ammunition, types of ... 921
Army Materiel System Analysis Agency (AMSAA) ... 919
Commercial utility and cargo vehicle (CUCV) ... 919
OPA, Other Procurement, Army ... 918
Small unit support vehicle (SUSV) ... 919
Stratton, Hon. Samuel S., a Representative from New York ... 1
Wagner, Dr. Richard, Assistant to the Secretary of Defense for Atomic Energy, Department of Defense:
Statement—Pershing II program ... 749
B-1, vulnerability of ... 757
B-52, vulnerability of ... 757
C^3 (command, control and communications), important in deterrence ... 757
GLCM, deployment of ... 755
ICBM force, vulnerability of ... 757
Issues, key ... 752
Modernization, need of ... 761
MX reentry vehicle decision, point paper ... 778
NATO:
Allies, result of delay in deployment by ... 754
Pershing II, deployment of, ... 755, 759
Site preparation ... 759
Worldwide ... 41
Soviet:
Modernization program ... 757
Moratorium ... 783
Submarines, vulnerability of ... 757
Theater nuclear forces ... 783
Written statement ... 752
Military effectiveness ... 753
Modernization, theater nuclear ... 753
NATO's decision to deploy long-range theater nuclear systems, background ... 752
Walker, Maj. Gen. Emmett H., Jr., Director, Army National Guard, Department of the Army:
Statement ... 1153
Air defense capability ... 1175
Pivad program ... 1175
Puerto Rican Army National Guard ... 1176
Rapid Deployment Force ... 1156
Round-out brigade ... 1155
Shortages, equipment ... 1181
Written statement ... 1163
Equipping the force ... 1165
Manning the force ... 1163
Mobilizing the force ... 1169
Organizing the force ... 1163

Walker, Maj. Gen. Emmett H., Jr., Director, Army National Guard, Department of the Army—Continued
Written statement—Continued
Page
Training the force 1169
Whalen, Brig. Gen. Donald P., Program Manager, Bradley fighting vehicles, Warren, Mich.:
Statement—Progress and status of the Bradley fighting vehicles 840
IFV's used in adjunct with tanks 850
Larkin study—Bradley infantry fighting vehicle 858
M-2 (infantry fighting vehicle) 840
M-3 (cavalry fighting vehicle) 840
Major contractors 841
Programs costs 853
Rationale for Bradley IFV 849
TOW launcher 840
Written statement 833
Fielding 837
Financial summary 837
M-2 (infantry fighting vehicle) 834
M-3 (cavalry fighting vehicle) 834
Production costs, components of 838
Reliability growth, system 836
Testing 835
White, Lt. Gen. William J., USMC, Deputy Chief of Staff for Aviation:
Statement—Combat capability, aircraft 400
AV-8B (Harrier) 401
CH-53E (Super Stallion) 400
F/A-18 (Hornet) 400
Helicopter shortages 436
Reserve squadrons 402
RF-4B 436
TEREC system 436
Written statement 402
AH-1T (Cobra) 403
AV-8B (Harrier) 402
CH-53E (Super Stallion) 403
F/A-18 (Hornet) 403
Helicopter lift, a critical necessity 402
JVX 402
Hellfire missile 404
I Hawk Triad equipment 404
Laser Maverick 404
Marine Corps aviation, state of 402
Modernization program 402
Stinger missiles 404

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